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1892  
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CATALOGUE

DRAWING



INSTRUMENTS

MANUFACTURED BY

THEODORE ALTENEDER & SONS

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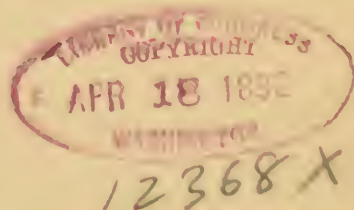
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THEODORE ALTENEDER & SONS

PHILADELPHIA

939 to 945 RIDGE AVENUE



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E. A. W. Schell, Jr.

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**Our interest in our goods by no means ceases with the shipment ; we request that we be notified of any defects that occur in our instruments, even after they have been in use, and whether purchased direct of us or through a dealer. We guarantee every instrument to be satisfactory, and are personally responsible for everything bearing our name or trade-mark, "T. A."**

Genuine Alteneider Instruments are "always stamped with name or trade-mark, T. A."





# Alteneder's Drawing Instruments.

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THE accuracy, elegance, speed, and even success of the draughting done by the professional man, is in a measure dependent upon the qualities of the instruments which he uses. The nearer they are to perfection in every minute detail as to form, construction, proportion, material and finish, the nearer can he approach to perfection in his work. With perfect tools, there is nothing to prevent his acquiring the manual dexterity necessary to produce the best work in the least time, and, as these tools are constantly used by him during the active period of his career, their first cost is of small importance in comparison with their qualities. He may use one instrument throughout a period of thirty years or more, when the weight, feel and location of the parts become so familiar that the operations are performed instinctively, and the mind is left entirely free for its legitimate work, and is not hampered by any demands on it in connection with the merely mechanical part of the draughting. But such an instrument must be perfect originally and must be so well constructed and all its parts so well fitted that they will retain their qualities. For such an instrument he can afford to pay any price; that is to say, it would be true economy for him to pay the cost of such qualities if he felt convinced that he was obtaining them.

Thoroughly believing in these truths, we have faithfully and persistently endeavored to attain perfection in material, form, fit and finish, and we now submit genuine Alteneder Instruments as the results of over forty years of such efforts, with the full conviction that for convenience of handling, for rapidity and delicacy of adjustment, for retention of position, for all desirable stiffness (*combined with remarkable lightness*), for the fineness and accuracy of the work that can be done with them, and for their reliability as to RETAINING THEIR QUALITIES during years of constant use, THEY ARE SUPERIOR TO ANY INSTRUMENTS OF THE KIND.

*Every piece that we offer for sale is manufactured in our own shops, under our personal supervision, and is guaranteed to be as represented.*

Many of the most eminent engineers and architects have used these instruments for twenty or thirty years and prefer their old instruments now to any new ones of other make. We have yet to hear of the first instance where our instruments did not give satisfaction, or where they could not be made as good as new after thirty years use in expert hands. It is unnecessary to call the attention of professional men to the value of these features, because they realize and appreciate the importance of using instruments which are always

the same in behavior and feel; but, to the apprentice, the student, or young engineer just beginning his career, we would like to give a warning against the purchase of cheap instruments, highly polished and attractively arranged in handsome cases, which will not retain their qualities many months and will prove a source of vexation, delay, and bad work until they are finally cast aside. It is far better to invest the cost of such a case in two or three essential tools of the very best make obtainable, and then gradually to add to these as requirements suggest and ability increases, until a first-class outfit is obtained, which will last a lifetime, and which will become so familiar as to require no thought or care in handling. Such a course of procedure will actually prove a considerable saving in money, although the price paid for each article may have been two or three times as much in the latter instance as in the former.

## IMITATIONS.

Many imitations of our instruments are offered, of both foreign and domestic manufacture, in which the form and sizes of the parts are closely followed, but the material and workmanship are so inferior that in a very short time the instruments become unfit for skilled hands and impossible of repair, so as to be practically useless. Money spent on such cheap and inferior tools is literally thrown away, and some of our old customers have left with us examples of such, as a warning to purchasers who might doubt the reasonableness of our prices.

These imitations are often catalogued in a manner calculated to mislead the purchaser; some at a lower figure and others at the same prices as genuine Altener Instruments, a discount being offered as an inducement. Should the customer be posted and ask for our name or trade-mark, he is reluctantly informed that they are not Altener's make, but "just as good." We therefore wish to inform the intending purchaser of the necessity of specifying "*genuine* Altener Instruments, manufactured by Theo. Altener & Sons, Philadelphia." Each genuine instrument bears the name "T. Altener" or trade-mark "T. A." stamped on it. For such instruments we are responsible, and if any defects arise at any time after the instrument is in use, that can be attributed to a fault in the workmanship or material, we repair or replace free of cost, whether purchased direct of us or through a dealer. We cannot offer any discounts, but we can furnish the BEST instruments at a fair price.

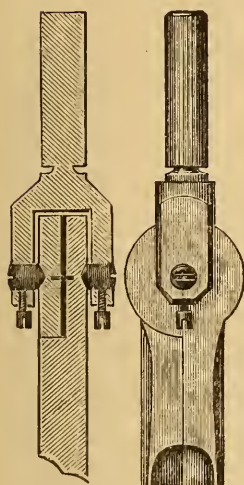
Descriptions and illustrations of the instruments which we manufacture will be found in the following pages.

# Alteneder's Patent Joint Dividers.

## Material.

The body and legs are made of German silver. The steel which is used is the very best that can be procured, and is well worked and tempered.

## Alteneder's Patent Joint.



Alteneder's Patent Joint.

This joint was invented by Theo. Alteneder, Sr., and patented in 1850 and again in 1871. Experience has proved it to be the only perfect joint for drawing instruments, and, if properly constructed, it can never wear or give out in any way. It is now largely imitated by other manufacturers, but the construction is usually so poor as to make it practically worthless for accurate draughting. As we construct it, it is very accurately fitted with a washer between two flat, circular-bearing surfaces, which are clamped together by means of the conical points of two opposite screws carried in a head of German silver, the metal of which has been hammered to make it stiff and of reliable elasticity. This arrangement is based upon correct theory. It ensures a uniform pressure and amount

of friction in all positions of the legs of the instrument, so that when the joint is once adjusted to suit the requirements or fancy of the user, it will have the same stiffness or "feel" in all positions, and will retain it.

In the cheap imitations of this joint, the friction does not depend upon the spring pressure of the head. In consequence of this, the joint soon becomes loose, and any attempt to tighten it will prove unsuccessful, because the clamping-head is made of a simple casting which possesses no elasticity and will permanently and continually bend under the strain of the screws.

## Knuckle-Joints.



Knuckle-Joints.

Each leg is provided with a knuckle-joint to enable the needle-point and the pencil or pen to be kept approximately perpendicular to the paper in making circles of any radius within the capacity of the instrument. These joints are carefully fitted and possess the same stiffness in all positions. They are secured by screws, so that this stiffness can be adjusted to suit the fancy of the user. In cheap instruments, these are rivets with imitation screw-heads, it being impossible to cut a thread in the instrument that will hold, on account of the metal being a soft casting; so that when the joint becomes loose, as it invariably does on account of the bad fitting, there is no way of tightening it, and the tool is useless.



## Spring Pen.

This improved pen is made of one piece of steel, without any joint between the two blades, thus ensuring that the points will always match, and avoiding any possibility of lost motion. The outside blade is in the form of a spring for the purpose of increasing the ease of adjustment and the distance it can

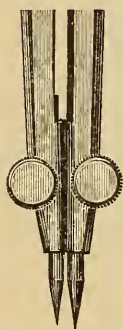


Spring Pen.

be separated for cleaning. The blades are tempered and ground to the best form for making perfect lines of

any desired thickness, and to secure a ready flow of ink. The steel, shape and temper are the results of long experience and are unequaled. The adjusting-screw is of steel and has a washer under the milled head. It is well fitted, but of very easy adjustment. The thread is guaranteed not to strip.

## Needle and Pencil Clamp Holders.



Clamp Holders.

The holders for the needle-point and for the lead are parallel to the central axis, are accurately drilled and are split to an unusual length, so that the clamping-screws will hold the needle-point and the lead firmly and uniformly, thus enabling their positions to be relied on.

This form of clamp holder can be loosened just sufficient to permit the needle-point or lead to be pushed in or out to give an exact adjustment of length and can be tightened without altering this adjustment in the least. This is a great improvement over any of the old methods of holding the needle-point and lead.

## Alteneder's Improved Clamp Sockets.



Clamp Sockets.

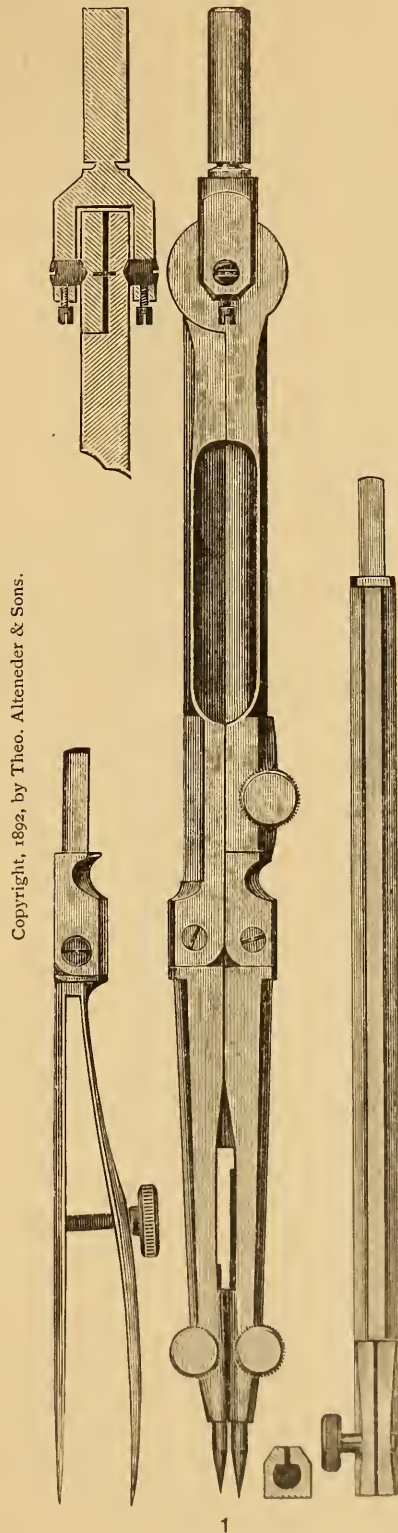
In our dividers with interchangeable pen and pencil, the shanks on the latter enter freely a socket in the leg, which is split and is provided with a clamping-screw, by means of which it is pinched solidly upon the shank, thus avoiding all wear, and at the same time enabling the parts to be readily separated. This is a great improvement over the ordinary sockets, which from wear and imperfect construction become loose, rendering the whole instrument unreliable.

## Perfect Details.

There is not a single feature of these Dividers which has not been carefully studied with the object of making it perfect, and we believe that there is no room now left for improvement either in proportions, fit, finish, or weight.

# Alteneder's Patent Joint Instruments.

Each instrument is stamped T. ALTENEDER, Pat. 1871.



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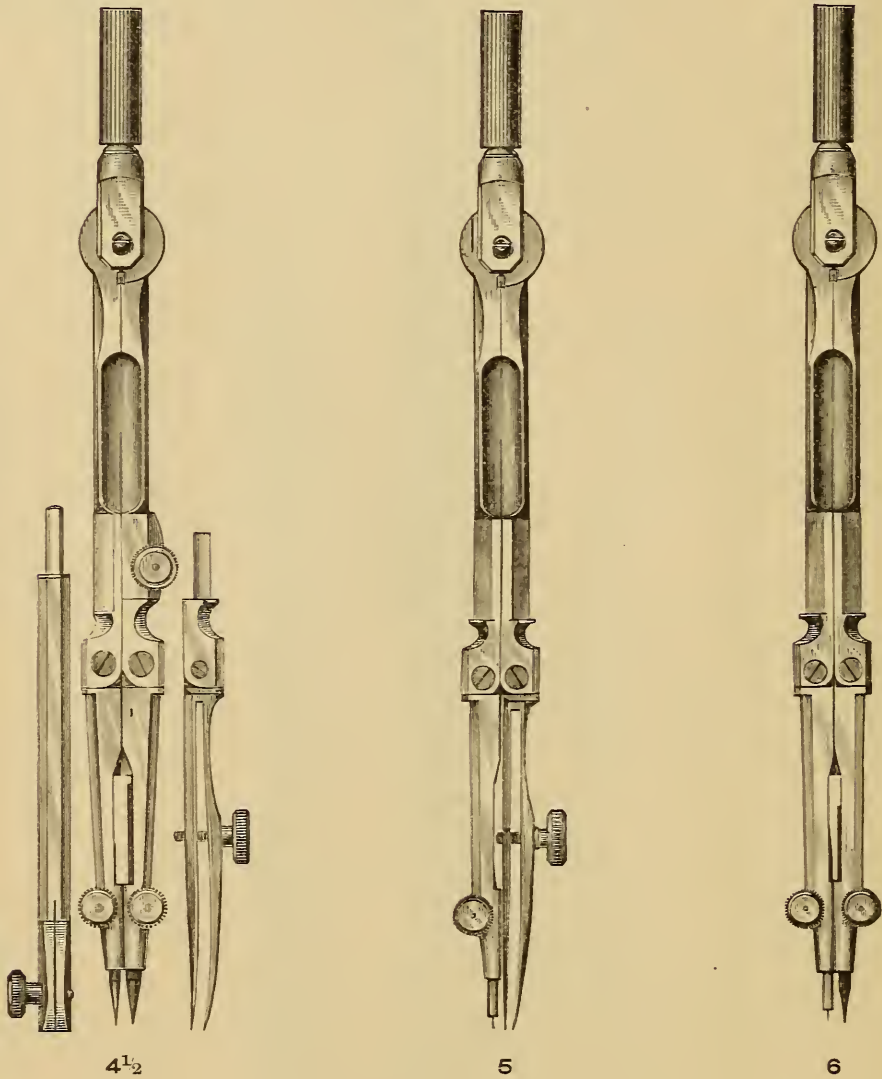
0	Dividers, 5½-inch, fixed Needle Point, with Pen and Pencil . . . each.	\$7 00
1	Dividers, 5½-inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar . . . . .	7 50
2	Dividers, 5½-inch, fixed Needle Point and Pen . . . . .	5 00
3	Dividers, 5½-inch, fixed Needle Point and Pencil . . . . .	5 00



Alteneder's Patent Joint Instruments.

Each instrument is stamped T. ALTENEDER, Pat. 1871.

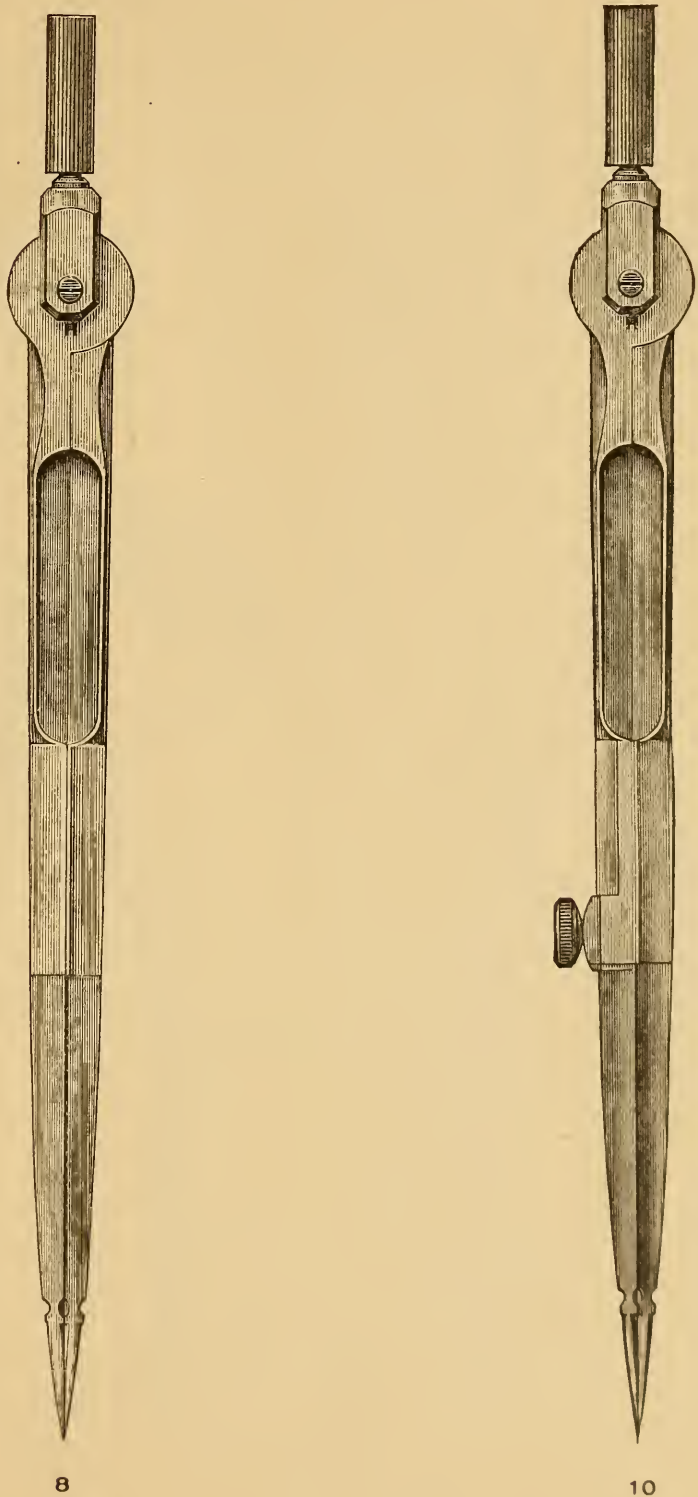
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4	Dividers, 3 1/2-inch, fixed Needle Point, with Pen and Pencil . . . each,	\$6 00
4 1/2	Dividers, 3 1/2-inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar . . . . .	" 6 75
5	Dividers, 3 1/2-inch, fixed Needle Point and Pen . . . . .	" 4 00
6	Dividers, 3 1/2-inch, fixed Needle Point and Pencil . . . . .	" 4 00

# Alteneder's Patent Joint Instruments.

Each instrument is stamped T. ALTENEDER, Pat. 1871.



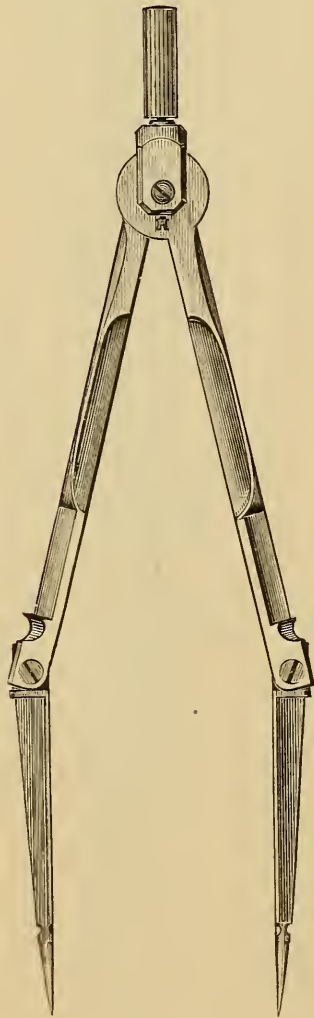
7	Plain Dividers, 3½ inches long . . . . .	each, \$2 25
8	Plain Dividers, 5 inches long . . . . .	" 2 50
9	Hair-spring Dividers, 3½ inches long . . . . .	" 3 50
10	Hair-spring Dividers, 5 inches long . . . . .	" 4 00

# Alteneder's Improved Plain <sup>AND</sup> Hair-Spring Dividers.

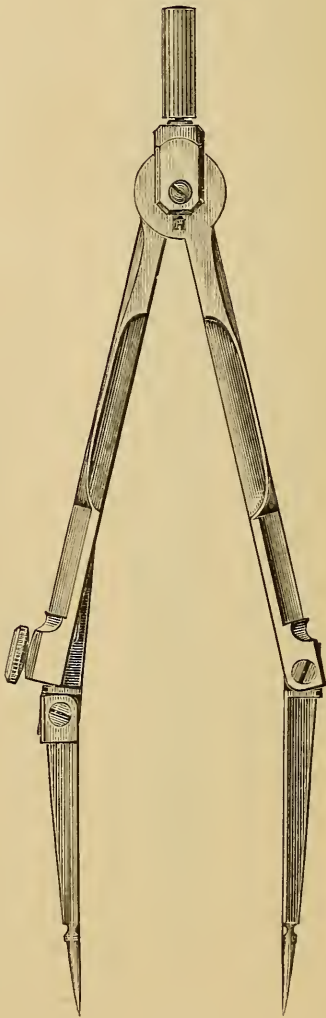
Each instrument is stamped T. ALTENEDER, Pat. 1871.

These instruments differ from the ordinary Plain and Hair-Spring Dividers in that the steel points are provided with knuckle-joints instead of being fixed. This permits both points to be set perpendicular to the paper, which is an advantage in stepping or spacing distances of 3 inches and over. In spacing teeth around a pitch circle, or in dividing a given length into a number of equal parts, the convenience and accuracy of the hair-spring adjustment and the great advantage of having both points perpendicular make the Improved Hair-Spring Dividers especially desirable.

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8 A.



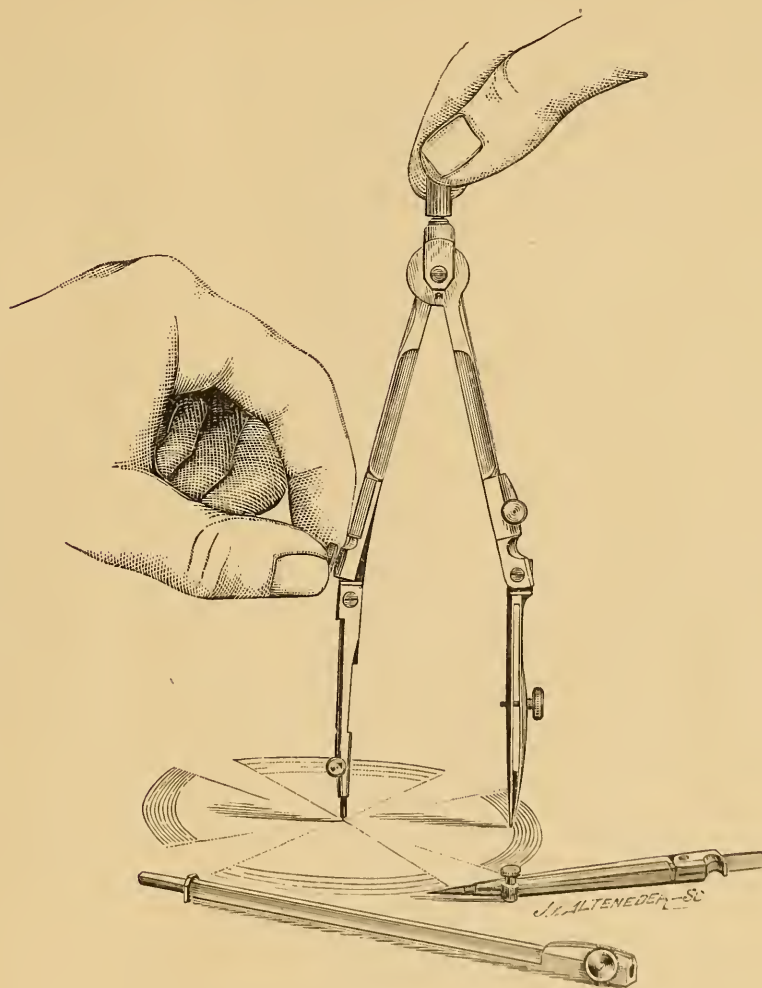
10 A.

7 A.	Plain Dividers, 3½-inch, with Joints in Legs . . . . .	\$3 25
8 A.	Plain Dividers, 5-inch, with Joints in Legs . . . . .	3 50
9 A.	Hair-Spring Dividers, 3½-inch, with Joints in Legs. . . . .	4 50
10 A.	Hair-Spring Dividers, 5-inch, with Joints in Legs . . . . .	5 00

## Alteneder's Patent Joint Dividers.

With Hair-Spring Attachment on Needle-Point Leg.

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These instruments are the same in size, and possess all the features of the dividers already described, with the addition of a screw-adjustment of the needle-point leg, a refinement which aids materially in accurate work, is useful in ordinary work and which does not detract in the least from the stiffness and reliability of the tool.

### CONSTRUCTION.

This adjustment is obtained by jointing the lower half of the needle-point leg to an intermediate, long, stiff, steel spring, which is accurately fitted



in a groove in the upper half, but is attached only at its upper end, the lower end being drawn into place against the elasticity of the spring by means of a thumb-screw.

This gives to the needle-point a very delicate, though rigid, adjustment, which can be used for two purposes, either for correcting any slight inaccuracies in setting the pencil or pen, or for drawing parallel circles at minute distances apart.

By its use, the pencil or pen can be set with the utmost nicety without removing the needle-point from the paper, thus overcoming the difficulty often experienced in drawing arcs perfectly tangent to each other or to straight lines, as well as arcs of precise radius or passing through an exact point.

## OPERATION.

The operation is as follows: Adjust the thumb-screw until the spring is in a position somewhere near the middle of its movement, in order to allow for final adjustment in either direction. Put the needle-point into the paper at the given centre, open or close the legs *approximately* to the point through which the circle is to pass, and then, with the fingers of the other hand and without removing the needle-point from the paper, turn the thumb-screw to the right or left in order to bring the pencil or pen precisely to the point required. The delicacy and accuracy thus attained, without sacrifice of rigidity in the tool or convenience in the handling of it, are valuable additions.

## ADVANTAGES.

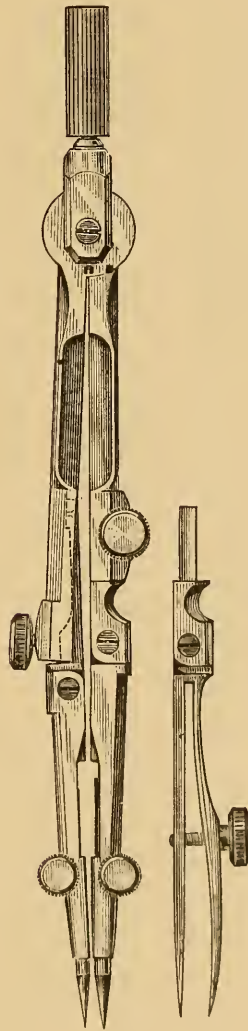
In mechanical drawings of any intricacy, it frequently happens that there are many circles having the same centre, and that the centre hole in the paper becomes so enlarged as to be totally unreliable, besides detracting from the appearance of the drawing. This arises from the side strain of the needle-point in the centre hole, due to the force exerted in opening and closing the legs to make so many fine adjustments. With the screw adjustment, handled with proper care and judgment, the centre hole can be kept in perfect condition, no matter how many concentric circles are drawn about it, and, at the same time, the operation is more convenient and accurate.



# Alteneder's Patent Joint Instruments.

With Hair-Spring Attachment on Needle-Point Leg.

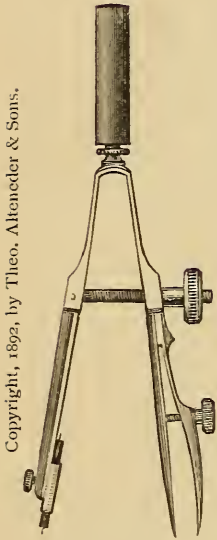
Each instrument is stamped T. ALTENEDEK, Pat. 1871.



4 A.

1 A.	Dividers, 5½-inch, same as No. 1, but with Hair-Spring Attachment on Needle-Point Leg . . . . .	\$9 00
2 A.	Dividers, same as No. 2, but with Hair-Spring Attachment . . . . .	6 50
3 A.	Dividers, same as No. 3, but with Hair-Spring Attachment . . . . .	6 50
4 A.	Dividers, same as No. 4, but with Hair-Spring Attachment . . . . .	7 50
4½ A.	Dividers, same as No. 4½, but with Hair-Spring Attachment . . . . .	8 25
5 A.	Dividers, same as No. 5, but with Hair-Spring Attachment . . . . .	5 50
6 A.	Dividers, same as No. 6, but with Hair-Spring Attachment . . . . .	5 50

## Alteneder's Spring Bow Instruments.



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These instruments are used as adjuncts to the regular Dividers and have their own special field of usefulness. They are made of one continuous piece of steel, finished and tempered with the greatest care. The handle is of German silver, screwed into the instrument. The superior quality and temper of the steel enables the points to be separated to an unusual extent without losing stiffness.

The points are drawn together by means of a thumb-nut on a fine, steel screw, acting in opposition to the spring of the legs, so that there can be no lost motion and no accidental change in the position of the points. In this respect, they are superior to Dividers, which are liable to be altered by a "jar" after being set. They are, however, not intended to take the place of the latter, but to be used as an aid to them.

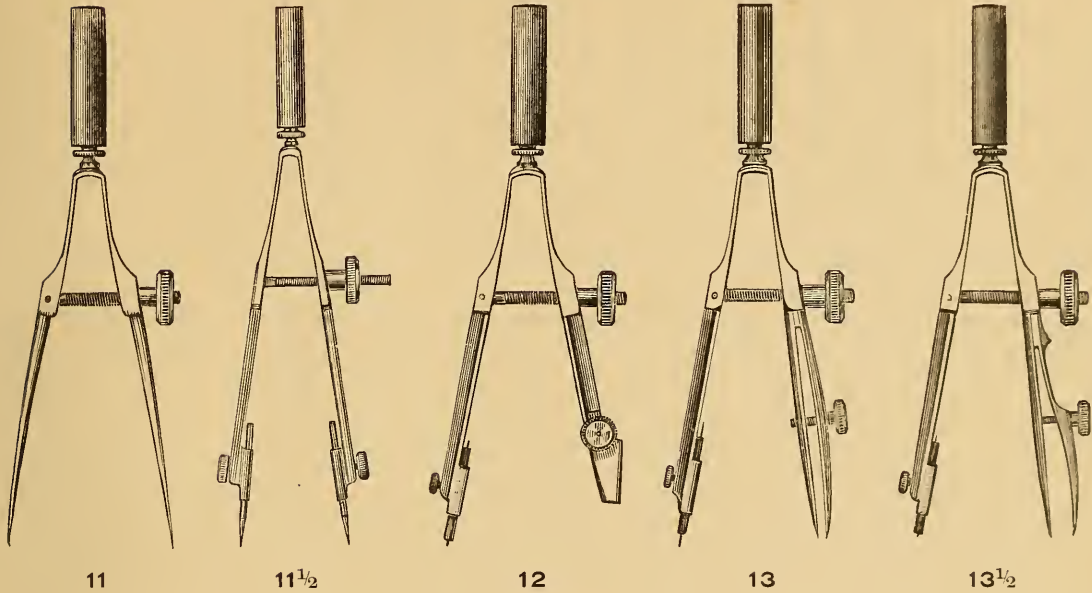
Apart from their delicate adjustment for making all the small circles on a drawing, they are very convenient for making all the duplicate circles, such as those which represent bolt holes, boiler tubes, etc., because they can be relied upon to maintain their size without any care on the part of the user. The adjustment is much quicker than might be supposed, as the legs can be pressed together, to approximate the required distance, by the fingers of the left hand and the thumb-nut rapidly run up in contact by the right hand, the final close adjustment being made by the thumb-nut alone.

The convenience of being able to set these instruments with the utmost nicety and ease, and to lay them down and take them up again any number of times, with the certainty that they will retain their adjustment, should commend their use to every practical man.

The Spring Bow Instruments are made  $1\frac{1}{2}$ , 2, 3, 4 and 5 inches long.

# Alteneder's Spring Bow Instruments.

Each instrument is stamped with Trade-Mark "T. A."



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## Regular Size.

11	Spacing Dividers, 3 inches long, Metal Handle . . . . .	each, \$1 75
11½	Spacing Dividers, 3 inches long, Metal Handle, with Needle Points . . . . .	" 2 50
12	Bow Pencil, Needle Point, 3 inches long, Metal Handle . . .	" 2 50
13	Bow Pen, Needle Point, 3 inches long, Metal Handle . . . .	" 2 50
13½	Bow Pen, Needle Point, 3 inches long, Metal Handle, with Spring on Pen . . . . .	" 2 65
	Imitation Morocco Covered Case, for any three of above instruments . .	80
	Real Morocco Leather Covered Case, for any three of above instruments .	1 00

## Size "A."—2 Inches Long.

11 A.	Spacing Dividers, 2 inches long, Metal Handle . . . . .	each, \$1 75
11½ A.	Spacing Dividers, 2 inches long, Metal Handle, with Needle Points . . . . .	" 2 50
12 A.	Bow Pencil, Needle Point, 2 inches long, Metal Handle . .	" 2 50
13 A.	Bow Pen, Needle Point, 2 inches long, Metal Handle . . .	" 2 50
13½ A.	Bow Pen, Needle Point, 2 inches long, Metal Handle, with Spring on Pen . . . . .	" 2 65
	Imitation Morocco Covered Case, for any three of above instruments . .	80
	Real Morocco Leather Covered Case, for any three of above instruments .	1 00

## Alteneder's Spring Bow Instruments.

Each instrument is stamped with Trade-Mark "T. A."

### Size "B."—4 Inches Long.

11 B.	Spacing Dividers, 4 inches long, Metal Handle . . . . .	each, \$2 50
11½ B.	Spacing Dividers, 4 inches long, Metal Handle, with Needle Points . . . . .	" 3 25
12 B.	Bow Pencil, Needle Point, 4 inches long, Metal Handle . .	" 3 25
13 B.	Bow Pen, Needle Point, 4 inches long, Metal Handle . . .	" 3 25
13½ B.	Bow Pen, Needle Point, 4 inches long, Metal Handle, with Spring on Pen . . . . .	" 3 40
	Imitation Morocco Covered Case, for any three of above instruments . . .	95
	Real Morocco Leather Covered Case, for any three of above instruments .	1 25

### Size "C."—5 Inches Long.

11 C.	Spacing Dividers, 5 inches long, Metal Handle . . . . .	each, \$3 25
11½ C.	Spacing Dividers, 5 inches long, Metal Handle, with Needle Points . . . . .	" 4 00
12 C.	Bow Pencil, Needle Point, 5 inches long, Metal Handle . .	" 4 00
13 C.	Bow Pen, Needle Point, 5 inches long, Metal Handle . . .	" 4 00
13½ C.	Bow Pen, Needle Point, 5 inches long, Metal Handle, with Spring on Pen . . . . .	" 4 15
	Imitation Morocco Covered Case, for any three of above instruments . .	95
	Real Morocco Leather Covered Case, for any three of above instruments .	1 25

## Alteneder's Minute Bow Instruments.

Each instrument is stamped with Trade-Mark "T. A."



11 M.



12 M.



13 M.

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11 M.	Minute Bow Spacer, 1½ inches long . . . . .	\$1 75
12 M.	Minute Bow Pencil, 1½ inches long . . . . .	2 50
13 M.	Minute Bow Pen, 1½ inches long, with Spring on Pen . . . . .	2 50
	Imitation Morocco Covered Case, for three Minute Bow instruments . . .	80
	Real Morocco Leather Covered Case, for three Minute Bow instruments .	1 00

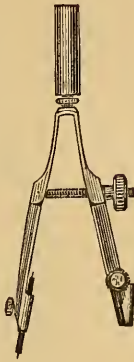


# Alteneder's Minute Bow Instruments.

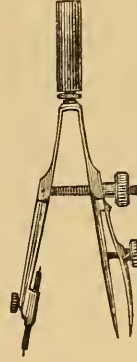
With Needle Point.

Each instrument is stamped with Trade-Mark "T. A."

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12½ M.



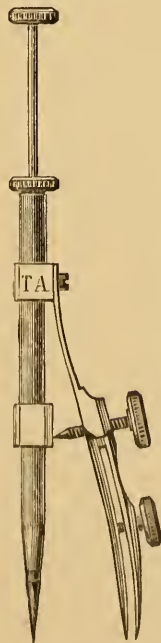
13½ M.

12½ M.	Minute Bow Pencil, 1½ inches long, with Needle Point . . . .	\$2 75
13½ M.	Minute Bow Pen, 1½ inches long, with Needle Point and Spring on Pen . . . . .	2 75

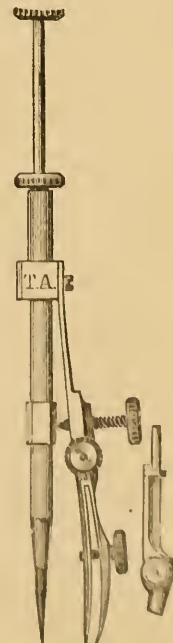
## Self-Adjusting Needle-Point Bow Instruments.

Each instrument is stamped with Trade-Mark "T. A."

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13 N.

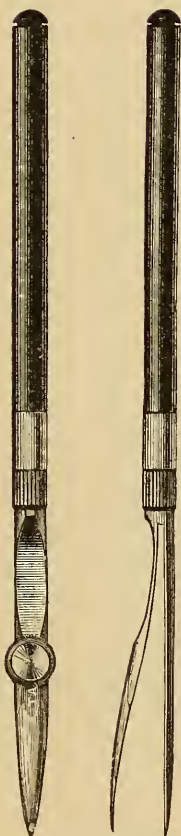


13½ N.

13 N.	Self-Adjusting Needle-Point Bow Pen, Spring on Pen . . . . .	\$4 00
13½ N.	Self-Adjusting Needle-Point Bow Pen and Pencil, Spring on Pen . . . . .	5 00



## Alteneder's Ruling Pens.



Improved Ruling Pen.

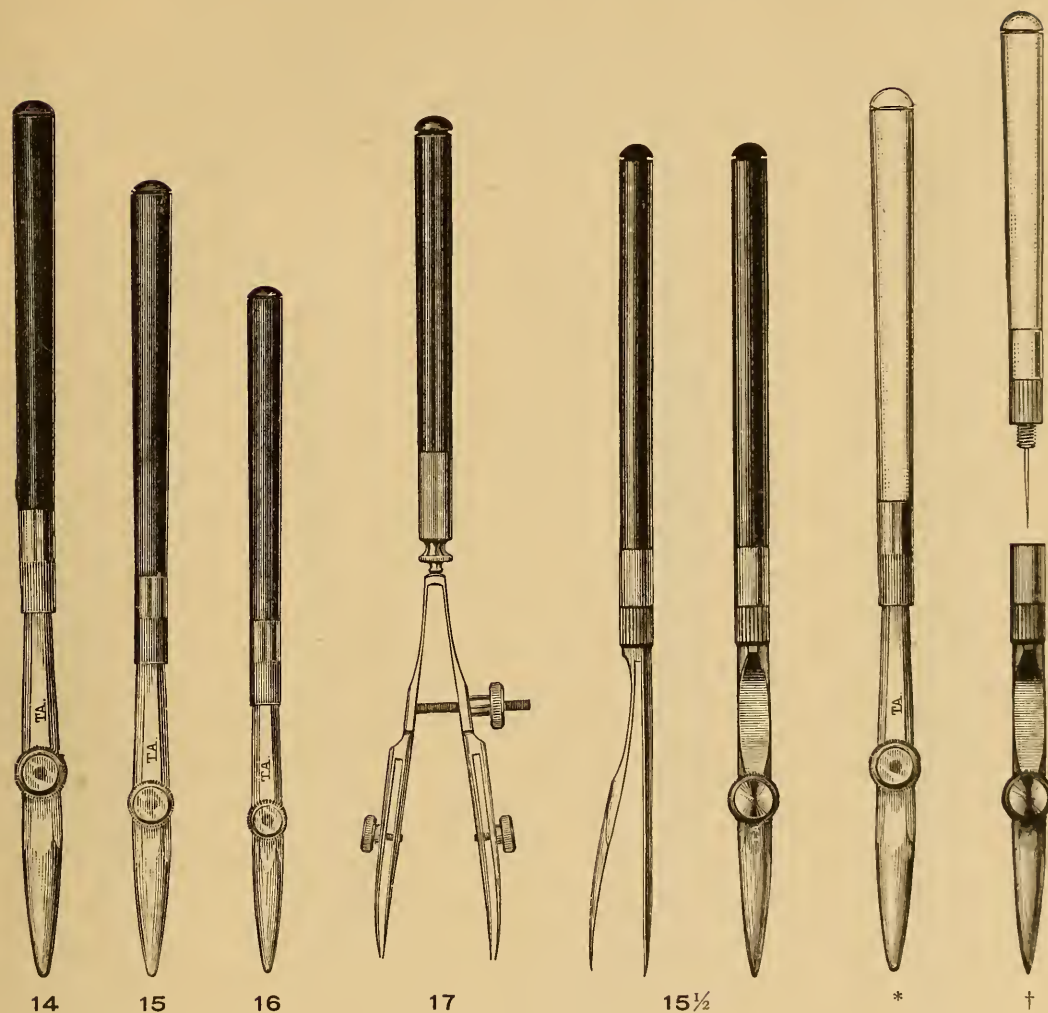
It is very important to a draughtsman that this essential instrument be of the best form and quality that can be obtained, regardless of cost. The annoyance, delay and bad work, which a poor pen is capable of causing, can not be afforded by anyone who has much use for it, and consequently that pen in which every detail of shape, finish and material has received the closest attention, should be the one selected.

Thoroughly appreciating this, we spare no pains to produce as nearly perfect a pen as possible. It is made in one piece in order to avoid all joints, with their liability to wear and consequent lost motion. The steel is of the very best quality, tempered to a hardness which our long experience has shown to be best adapted to the purpose. The adjusting-screw is of steel, well fitted to the threads in the blade. It is screwed into the milled head, and not merely riveted, as is the case with cheap pens. We guarantee that the thread will not strip and that the milled head will not come off. The point is very carefully and accurately ground to the best shape for making perfect lines, and the blades are finely finished both outside and inside. The handle is of ebony or ivory, as desired, and is so fitted to the German silver socket that it will not become loose. It is fitted with a pricker-point when desired. For use with red ink, we furnish a nickle-plated pen. The pen should always be wiped clean, except when in actual use, as most of the inks used in draughting contain an acid that eats into the steel, and will, in a short time, ruin the best ruling pen unless carefully wiped. Three sizes are made,  $4\frac{1}{4}$ , 5 and  $5\frac{1}{2}$  inches long.

Our improved pen possesses the advantages of the hinge pen without its disadvantages. It is made of one piece of steel; the upper blade is in the form of a spring, causing it to open wide to facilitate cleaning, and also diminish the stiffness of the adjustment for the thickness of the line to be drawn. Although this will do no better work than our standard pen, still the additional convenience of it is well worth the slight additional cost. This improvement is applied to all sizes and styles.

# Alteneader's Ruling Pens.

Each instrument is stamped with Trade-Mark "T. A."



Copyright, 1892, by Theo. Alteneader & Sons.

14	Ruling Pen, 5½ inch, Ebony Handle . . . . .	\$1 75
15	Ruling Pen, 5 inch, Ebony Handle . . . . .	1 50
16	Ruling Pen, 4¼ inch, Ebony Handle . . . . .	1 25
17	Railroad Pen, 5 inch, Ebony Handle . . . . .	3 50

# Alteneader's Improved Ruling Pens.

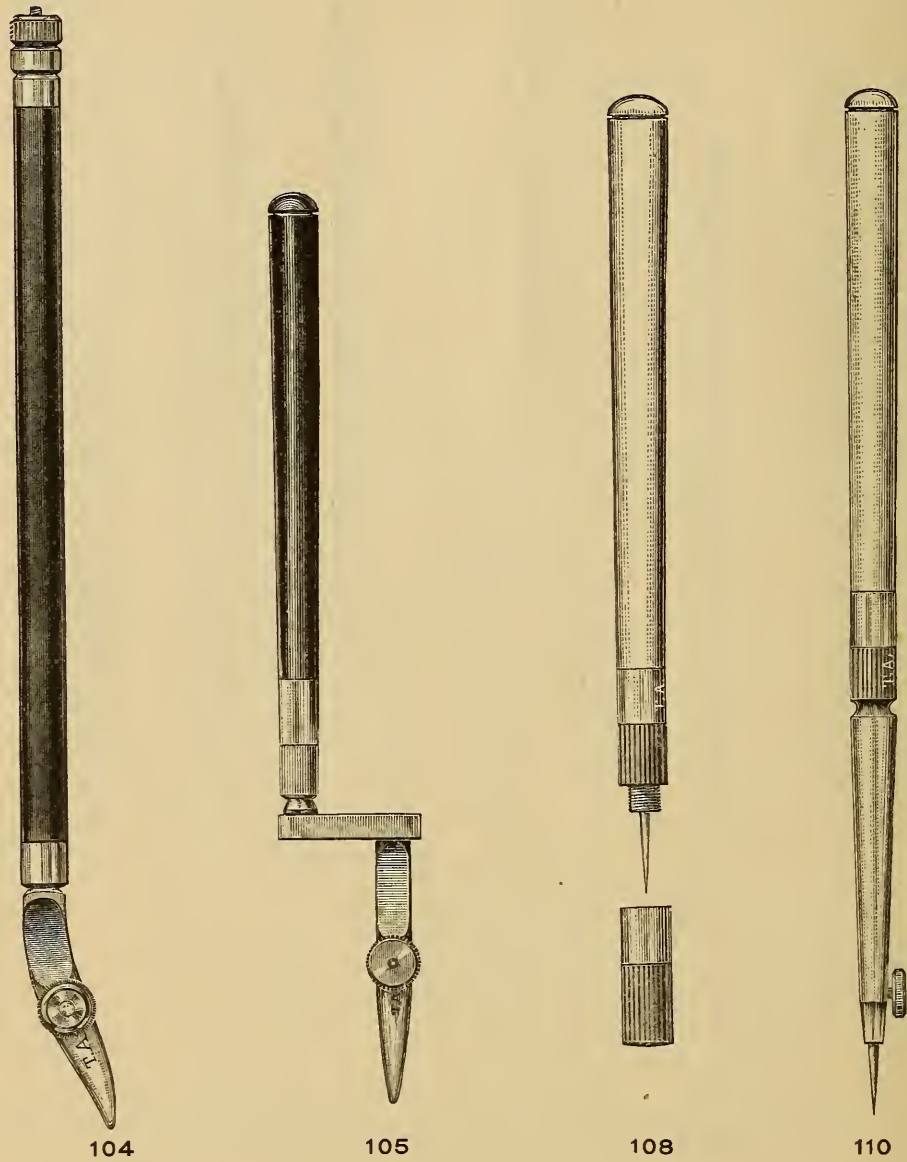
Each pen is stamped with Trade-Mark "T. A."

14½	Improved Ruling Pen, 5½ inch, Spring on Upper Blade, Ebony Handle . . . . .	\$1 90
15½	Improved Ruling Pen, 5 inch, Spring on Upper Blade, Ebony Handle . . . . .	1 65
16½	Improved Ruling Pen, 4¼ inch, Spring on Upper Blade, Ebony Handle . . . . .	1 40
	Nickle-Plated Pens for Use with Red Ink, extra . . . . .	10
*	Handles of Fine White Ivory in place of Ebony, extra . . . . .	20
†	Pricker-Point in Handle of any above Ruling Pens, extra . . . . .	15

Alteneder's Curve Pens and Prickers.

Each instrument is stamped with Trade-Mark "T. A."

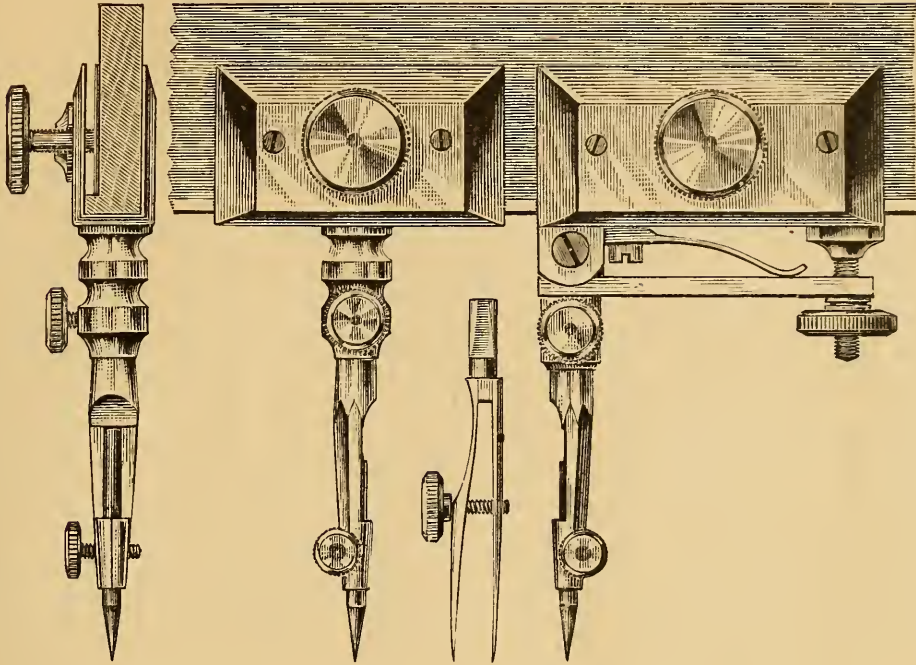
Copyright, 1892, by Theo. Alteneder & Sons.



104	Swivel Curve Pen, Spring on Upper Blade of Pen, Hollow Metal Handle . . . . .	\$2 00
105	Curve Pen, Spring on Upper Blade of Pen, Ebony Handle . . . . .	1 40
106	Curve Pen, Spring on Upper Blade of Pen, Ivory Handle . . . . .	1 60
107	Pricker, Fixed Needle Point, Screw Cap, Ebony Handle . . . . .	70
108	Pricker, Fixed Needle Point, Screw Cap, Ivory Handle . . . . .	90
109	Pricker, Removable Needle Point, Ebony Handle . . . . .	1 00
110	Pricker, Removable Needle Point, Ivory Handle . . . . .	1 20



## Alteneder's Beam Compass.



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IN all kinds of draughting, circles or arcs of larger radius than 8 or 10 inches are continually required, and it is important to possess an instrument that is light, handy, accurate and reliable for the work which may be beyond the capacity of the standard sizes of dividers. Such an instrument is found in the Beam Compass, which, as we construct it, is capable of almost as delicate adjustment and ready manipulation as the dividers.

It consists of two parts, one to hold the pencil or pen, and the other the needle-point. Each of these parts is a deep channel made of hammered German silver to secure elasticity, stiffness and lightness. Underneath one of the channels is a socket to receive and hold either the pencil-leg or pen. The pencil-leg has our standard clamp-holder for the round lead, to which is also fitted a needle-point for use in conjunction with the one on the other channel for stepping or scribing. The pen is made of one piece of steel, with a shank fitting interchangeably in the same socket as the pencil-leg, and is of the same quality as our standard pens.

The other channel has underneath it a bell-crank, hinged at one end. A fine steel screw is fastened in the other end of the channel and passes down through the horizontal arm of the bell-crank with a thumb-nut on the outside. A stiff, flat spring is fastened under the channel and keeps the arm pressed against the thumb-nut. The vertical arm of the bell-crank has a socket into which is screwed a standard needle-point leg with adjustable and changeable needle-point to match the pencil-leg of the other channel.

Each of these channels is provided with a light metal shoe, adjustable by means of a thumb-screw and guided by two steel screws. The shoe does not reach to the bottom of the channel, but leaves space enough for a flange on the lower edge of the hard-wood bar which is fitted to the channel. (See section.) It will thus be seen that the shoe, with its lower edge resting upon

the flange, permits the channel to be freely slid along the bar, while a turn of the thumb-screw will firmly clamp it in any desired position.

The final, accurate adjustment of the distance is obtained by means of the bell-crank which holds the needle-point leg. The thumb-nut, acting on the extreme end of the horizontal arm, produces an equal effect at the needle-point, while the spring always presses the arm firmly against the nut and prevents the possibility of any lost motion.

The method of handling the instrument is to place the needle-point in the centre of the desired circle, slide the pencil-channel to within an eighth of an inch of the radius, and then adjust to the exact distance by means of the thumb-nut. As fine and accurate work can be accomplished with this instrument as with dividers.

The use of a wooden bar has many advantages. It is lighter, stiffer, cheaper and more readily extemporized than any metal construction. Several bars of different lengths can be kept conveniently at hand, and in case of a very large radius being required, for which the draughtsman has no bar, it is an easy matter to make a temporary one without a flange, because the flange, though convenient, is not essential.

In our Beam Compasses Nos. 122 and 123, the pen or pencil and needle-point are interchangeable, that is, any of them can be used in either channel. By this arrangement the pencil or pen may be used in the channel which has the micrometer adjustment, which is a convenience in making circles of such large radius that both channels cannot be readily held in the hands.

### Wheel Attachment for Beam Compasses.

This consists of a channel, placed on the bar near to the channel carrying the pencil or pen, and having a spring branching down and out on each side with a wheel at each end rolling on the paper. It supports the bar in position for use, holding the pencil or pen clear of the paper so that a slight pressure will bring them in contact, and immediately on the release of this pressure the contact will cease. It adds materially to the convenience and ease of manipulation and does not in any way interfere with the work. It reduces the trouble of drawing very large circles to a minimum and for this operation is invaluable, while for all circles over 6 or 8 inches radius it makes the Beam Compass a handier tool than the ordinary dividers.



## Graduated Bars for Beam Compasses.

When desired, we furnish a graduated bar by which distances can be conveniently and quickly set off. Two styles of these bars are made, as shown by the illustrations. In the first, the bar may be graduated its entire length into any divisions that may be desired.

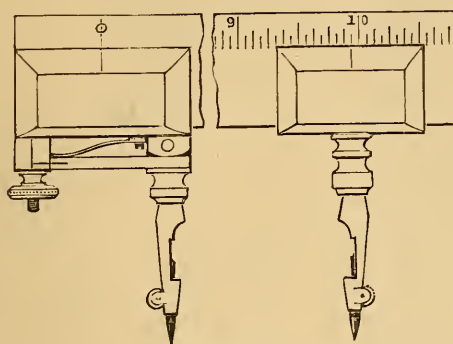


FIG. A.

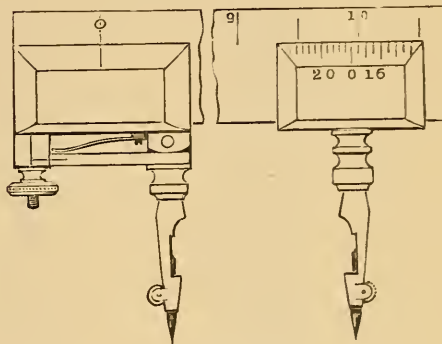


FIG. B.

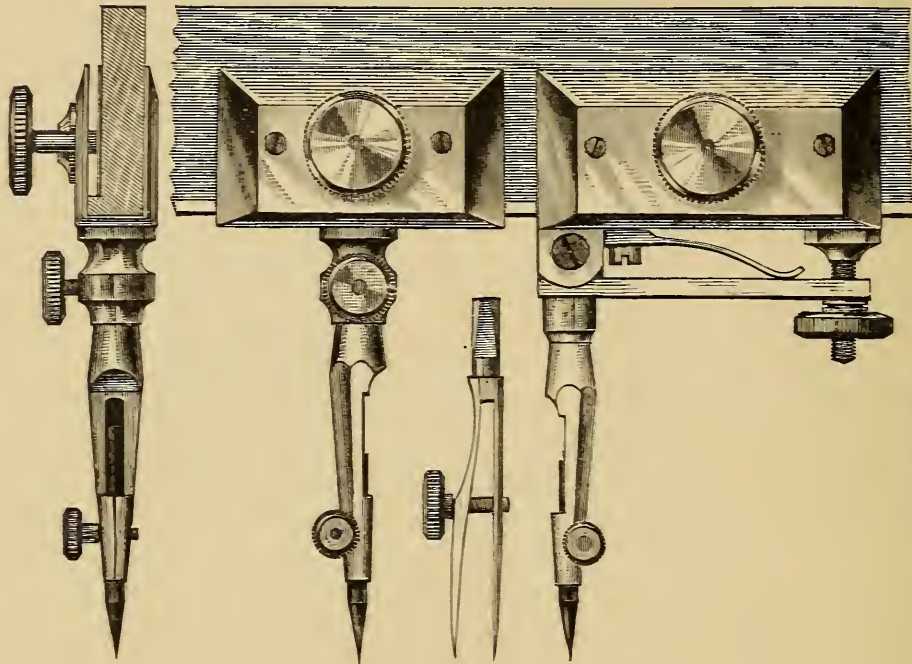
Fig. A. shows a bar graduated its entire length into inches and sixteenths. Each channel of the instrument has an index line at the centre; the channel with the micrometer adjustment is set with its index at the line marked O; the index on the other channel is then set at any dimension required. The bell-crank adjustment is provided with a horizontal line, which, when brought to match the fixed line on a metal piece fastened under the channel, indicates that the adjustment is correct; that is, that the distance between the needle-points is exactly the same as the measurement shown on the bar. When the pencil is used, this indication may or may not be correct. In this case the method of procedure is to place one channel at zero and the other at say 12 inches and then adjust the bell-crank until the distance between needle-point and pencil is exactly 12 inches when tried on another scale or on this distance carefully laid off on paper. When once set, all measurements will be correct until the alignment of the pencil is altered by sharpening.

In the second style, the bar is graduated to half inches and the subdivisions are made on one of the channels. We usually graduate a half inch on one side of the central line into sixteenths and on the other side into twentieths, as shown in Fig. "B," which will allow for distances in inches and tenths or inches and eighths, but we can make any graduations desired.

These graduated bars are a great convenience, especially in large work; not only for making large circles, but also for laying off long distances with ease, accuracy and certainty; they avoid the liability of error attending the shifting of a scale and adding dimensions, and are extremely useful in setting the instrument approximately. They constitute one of the refinements which have as yet been little used.

Alteneader's Beam Compasses.  
With Improved Micrometer Adjustment.

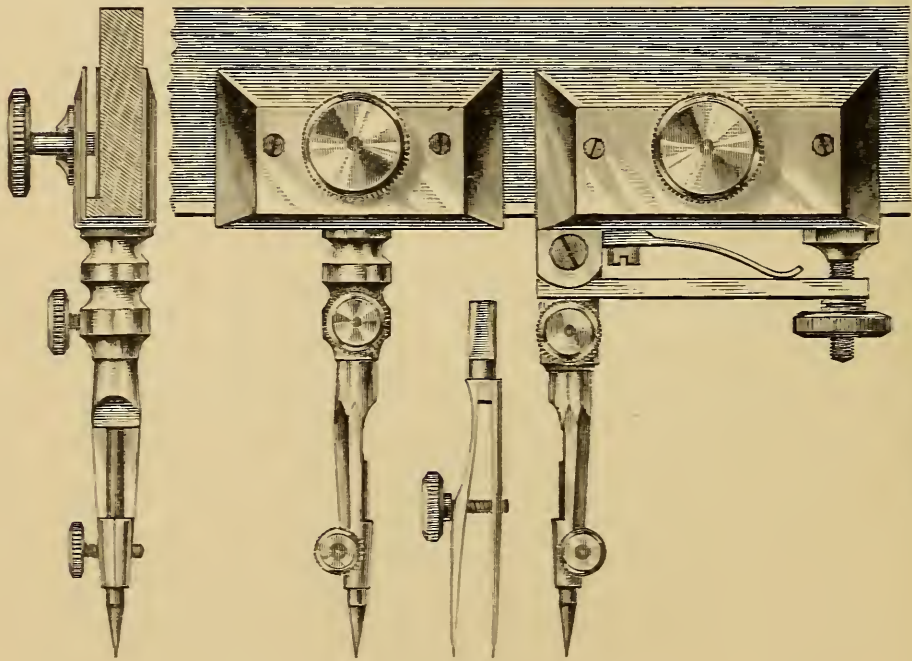
Each instrument is stamped T. ALTENEDER, Phila.



Copyright, 1892, by Theo. Alteneader & Sons.

119

- 118 Beam Compass, fixed Needle Point, Pen and Pencil . . . small size, \$7 00
- 119 Beam Compass, fixed Needle Point, Pen and Pencil . . . large size, 8 00

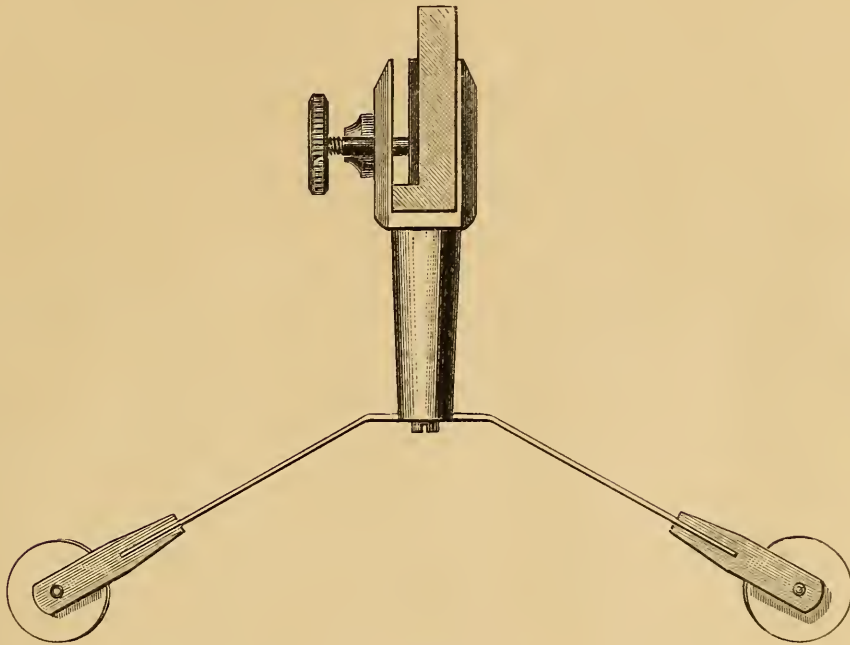


Copyright, 1892, by Theo. Alteneader & Sons.

123

- 122 Beam Compass, interchangeable Needle-Point Leg, Pen and Pencil . . . . . small size, \$7 75
- 123 Beam Compass, interchangeable Needle-Point Leg, Pen and Pencil . . . . . large size, 8 75

# Extras for Alteneder's Beam Compasses.



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126

- 126 Wheel Attachment for Beam Compass . . . . . \$2 50

NOTE.—In ordering the Wheel Attachment, it is necessary to state if wanted for large or small size.

- 127 Hardwood Bars with flange for Beam Compasses, for large or small size.

12	18	24	30	36	42	48-inch.
\$0 20	0 25	0 35	0 40	0 45	0 55	0 65

## Prices for Graduating Beam Compasses.

- 129 Beam Compass graduated like Fig. "A," on page 23, with Index,  
extra . . . . . \$0 50
- 130 Beam Compass graduated like Fig. "B," on page 23, with Index,  
extra . . . . . 0 75

## Graduated Bars for Beam Compasses.

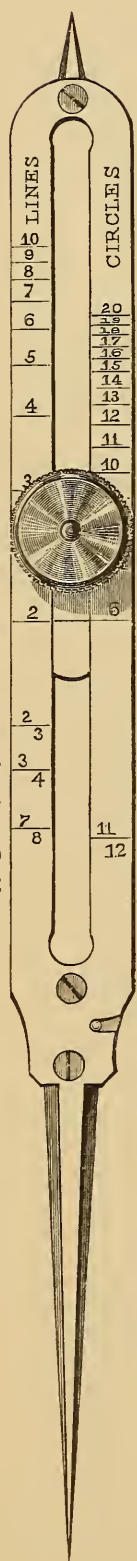
	12	18	24	30	36	42	48-inch.	
132	\$0 65	1 00	1 25	1 60	1 85	2 25	2 50	{ Graduated like Fig. "A," Page 23, either 16ths or 20ths.
134	0 50	0 75	1 00	1 25	1 50	1 75	2 00	{ Graduated like Fig. "B," Page 23, in half inches.

## Cases for Beam Compasses.

- Imitation Morocco Covered Case, for 118, 119, 122 or 123 . . . . . \$0 80
- Real Morocco Leather Covered Case, for 118, 119, 122 or 123 . . . . . 1 00
- Imitation Morocco Covered Case, for Beam Compass and Wheel Attachment 1 50
- Real Morocco Leather Covered Case, for Beam Compass and Wheel Attachment . . . . . 1 75



## Alteneder's Proportional Dividers.



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THESE dividers have a movable joint or fulcrum which can be set at any desired relative distance between the two ends, so that when the large points are opened to a given distance, the small points will be open a fraction of this given distance equal to the ratio of the distances of the joint or fulcrum from the end. In order to avoid the trouble of measuring and calculating this ratio, the instrument is very accurately graduated, and marked with all the ratios likely to be required.

Two sets of these graduations are made, one designated "Lines," and the other "Circles." The former set comprise the following:  $\frac{1}{12}$ ,  $\frac{7}{8}$ ,  $\frac{3}{4}$ ,  $\frac{2}{3}$ ,  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{1}{6}$ ,  $\frac{1}{7}$ ,  $\frac{1}{8}$ ,  $\frac{1}{9}$ ,  $\frac{1}{10}$ . If the length of a line or a measurement is to be reduced in any of these proportions, it is only necessary to set the mark or index on the fulcrum-block opposite the required graduation, when any distance included between the large points will be reduced the required amount between the small points. For instance, if the index is set to the  $\frac{1}{4}$  graduation, any measurement taken at the large points will be reduced to one-fourth at the small points. The utility and convenience of this in reducing drawings, in making Patent Office drawings, in making detail drawings from large construction drawings, and in making small scale illustrative drawings from working drawings, are self evident; but there are many operations of dividing lines, spacing, and symmetrical distribution, for which this instrument is a great convenience. It will prove a valuable addition to any draughtsman's outfit, and in any establishment will soon pay for itself in the increased accuracy of the work and the saving of time.

The set of graduations designated "Circles" is intended for dividing the circumferences of circles into any of the following equal parts: 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20, or of inscribing in circles polygons of any of these numbers of sides. To use the instrument for this purpose the index on the fulcrum-block is set to the required number, and the large points are separated to include the exact diameter of the circle; the required division of the circumference can then be made by stepping around it with the small points. For instance, if the index is set to the 12 mark, and the large points are set to the length of the diameter of a circle, the small points will be exactly correct for dividing the circumference into 12 equal parts. If it is required to make the divisions smaller than the graduations

provided for, it is an easy matter to select a division which will subdivide into the desired spaces.



The usefulness and convenience of these instruments have never been properly appreciated because they have been considered as intended only for special purposes, but they are really of very general application, and will prove profitable adjuncts in all kinds of work.

## CONSTRUCTION.

The proportional dividers are made of hard rolled German silver with hardened steel points. They are fitted with the greatest nicety, and graduated and adjusted with the utmost accuracy. Three styles are made, in *none* of which are the steel points soldered to the German silver bodies (the usual construction in other makes).

In one style the fulcrum-block is pushed along until its index comes opposite the required graduation, and is then clamped in the position by a milled nut. In this style the steel points are fitted in grooves and held in position by screws, so that in case of injury or breakage of a point it can be removed and a new one substituted and adjusted to preserve the accuracy of the proportions. If the points are soldered in, and require any sharpening or repairing which would alter their length, it would be necessary to file out the old graduations and make new ones in order to maintain the proportions.

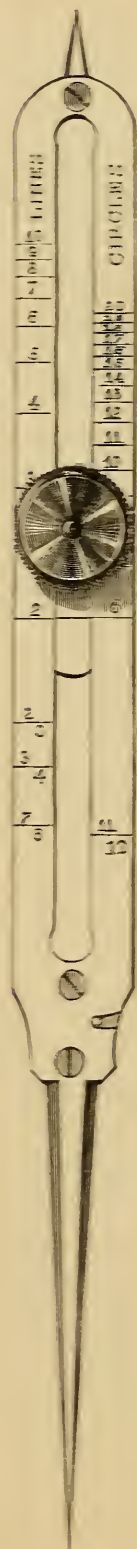
The second style has the points held in the same manner as the first, but its fulcrum-block carries a steel pinion gearing into a rack on the inside of the slot and operated by a milled head, thus enabling the adjustments to be more readily and accurately made. It also has a milled clamping-nut to hold the block after adjustment.

The third style is similar to the second, except that the steel points, instead of being held in place permanently by screws, are fitted in dovetails, in which they can be adjusted longitudinally, and held in the desired position by means of screws. This permits the points to be sharpened, or repaired and readjusted for length without the necessity of furnishing new points if the lengths become altered. It will also enable the draughtsman to sharpen and adjust the points himself.

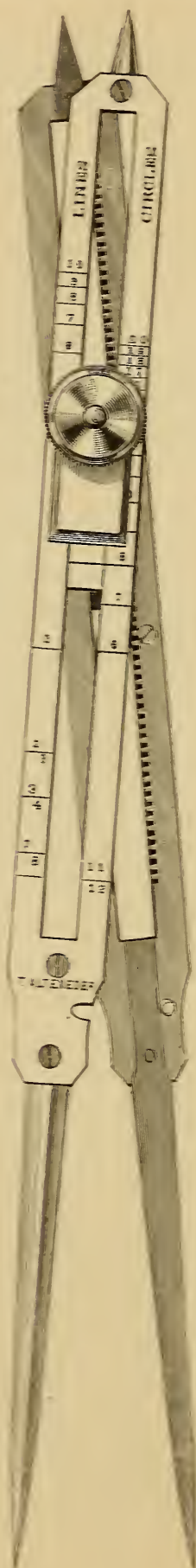
These instruments are of the very highest class of materials and workmanship, and are guaranteed for quality and accuracy.

# Alteneder's Proportional Dividers.

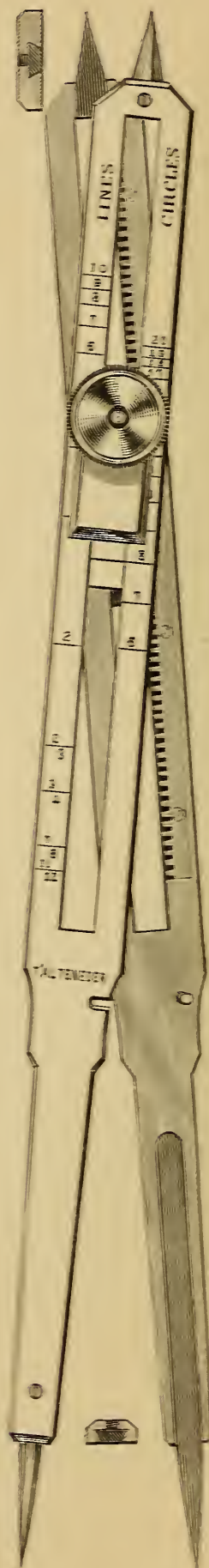
Each instrument is stamped T. ALTENEDER, Phila.



136 Proportional Dividers, 6 1/2 inch, Divided for Lines and Circles . . . . . \$9 00



137 Proportional Dividers, 8 inch, with Rack Movement, Divided for Lines and Circles . . . . . \$12 00



138 Proportional Dividers, 8 inch, with Rack Movement and Adjustable Points, Divided for Lines and Circles . \$16 00

139 Morocco Case, for 136, 137 or 138 . . . . . 1 50

# Rolling Parallel Rules.

An Accurate Instrument, of Hard Rolled German Silver, Carefully Made and Finely Finished, Rosewood Handle.

Each instrument is stamped T. ALTENEDER, Phila.

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by Theo. Alteneder  
& Sons.



28

## 140 Rolling Parallel Rules.

12-inch	.....	\$12 00
15 "	.....	15 00
18 "	.....	18 00

We graduate the above instruments to order.

## Polished Mahogany Boxes for Parallel Rules.

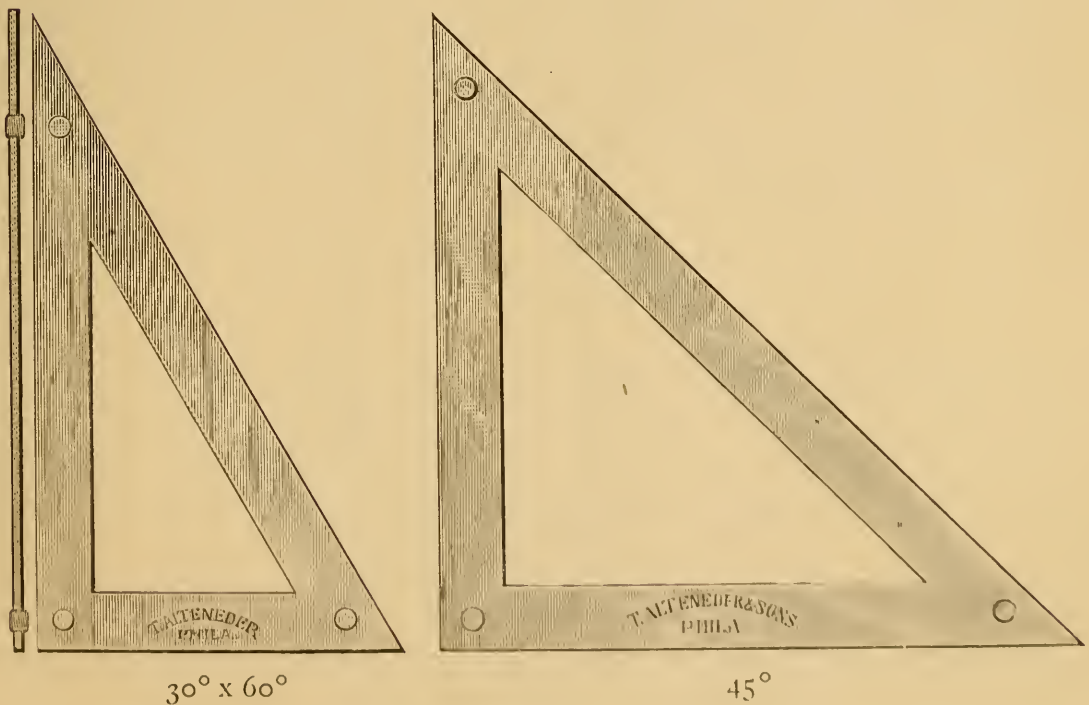
12	15	18-inch.
\$1 00	1 25	1 50

# German Silver Angles.

Of Hard Rolled German Silver, with Ivory Buttons to Prevent the Metal from Coming into Contact with the Paper.

Each instrument is stamped T. ALTENEDER, Phila.

Copyright, 1892, by Theo. Alteneder & Sons.



## 141 German Silver Angles, 30° x 60°.

5	6	7	8	9	10	11	12	13	14-inch.
\$2 25	2 50	2 75	3 00	3 50	4 00	4 50	5 00	5 75	6 50

## 142 German Silver Angles, 45°.

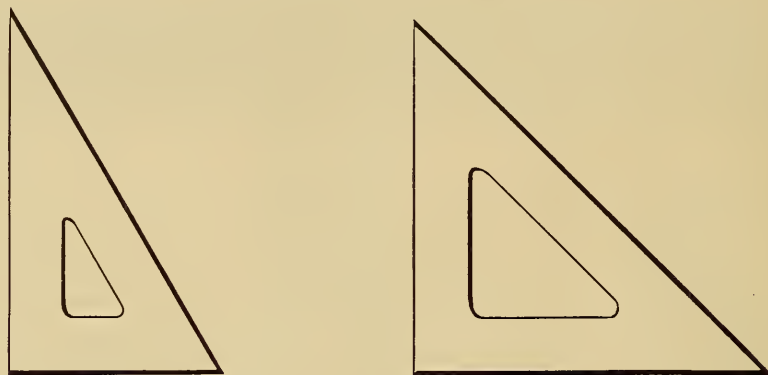
4	5	6	7	8	9	10	11	12-inch.
\$2 00	2 50	2 75	3 50	4 00	4 50	5 00	5 75	6 50



## Pure Aluminum Angles.

Each instrument is stamped T. ALTENEDER, Phila.

Made of Hard Rolled Aluminum, About One-Third the Weight of Steel or German Silver Angles.



143 Pure Aluminum Triangles, 30° and 60°.

5	6	7	8	9	10	11	12	13	14	15	16
\$2 25	2 50	2 75	3 00	3 50	4 00	4 50	5 00	5 75	6 50	7 25	8 00

144 Pure Aluminum Triangles, 45°.

4	5	6	7	8	9	10	11	12	13	14
\$2 00	2 50	2 75	3 50	4 00	4 50	5 00	5 75	6 50	7 25	8 00

## Alteneder's German Silver Thumb-Tacks.

Each Tack is stamped with Trade-Mark "T. A."

A Well-Made Tack, the Use of Which Will Save Much Annoyance. The Pins, of Stubb's Silver Steel, are of Proper Length and Thickness, Screwed into the Head and Warranted Not to Come Out. Packed on Blocks by Dozens.



145 German Silver Thumb-Tacks.

Small Size, $\frac{3}{8}$ -inch.	Medium Size, $\frac{1}{2}$ -inch.	Large Size, $\frac{5}{8}$ -inch.
Per dozen . \$0 65	90	1 10

### Needle Points.



146 Needle Points to fit any of our instruments . . . . . \$0 10

### Lead Case.



147 Nickel-Plated Case, for holding Leads or Needle Points . . . . . \$0 15

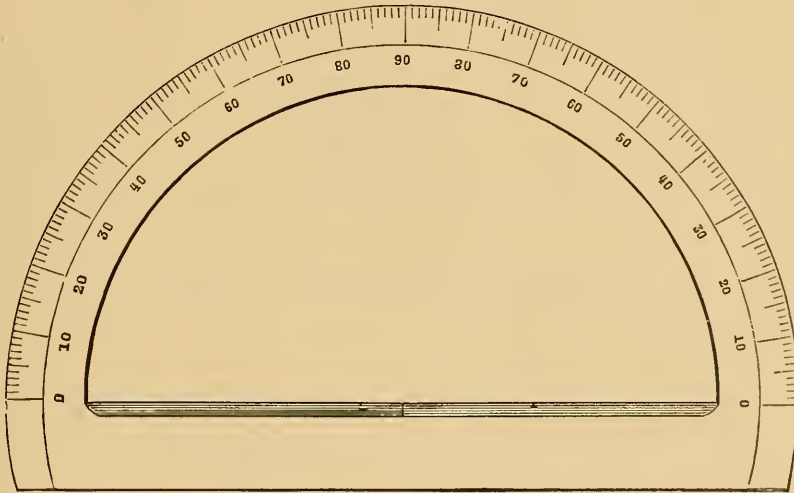


# Alteneder's German Silver Protractors.

Each instrument is stamped T. ALTENEDEK, Phila.

The requirements of a Protractor are that it shall be light and handy, and, at the same time, so stiff and strong that it will retain its shape; and, above all, that its graduations shall be *fine, distinct and accurate*.

Our Protractors are made of *Hard Rolled German Silver*, which is greatly superior to ordinary castings in strength, hardness and elasticity. They are graduated on our own engine. We guarantee them to be superior to any others.



## Half Circle, Plain.

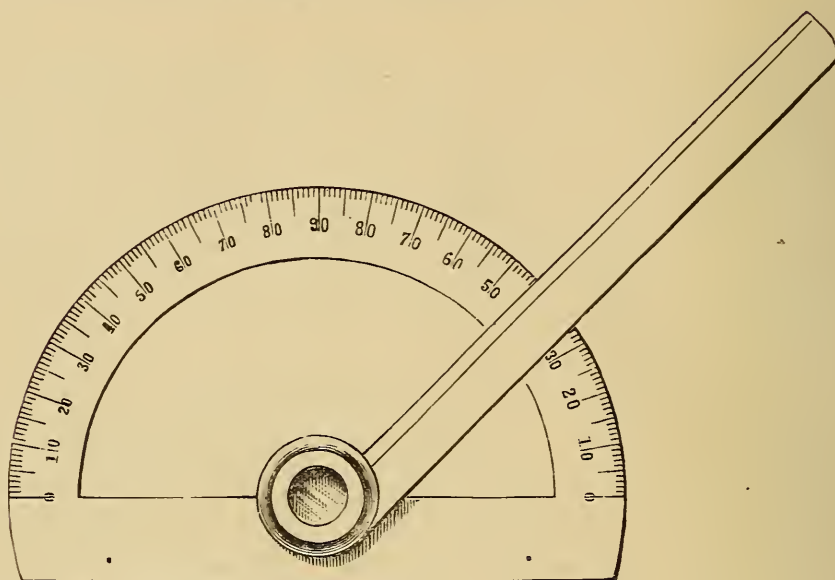
- 150 German Silver Protractor,  $\frac{1}{2}$  Circle  $\frac{1}{2}$  Degrees inside Centre, 5 inches, \$3 00
- 151 German Silver Protractor,  $\frac{1}{2}$  Circle  $\frac{1}{2}$  Degrees inside Centre, 6 inches, 4 00
- 152 German Silver Protractor,  $\frac{1}{2}$  Circle  $\frac{1}{2}$  Degrees inside Centre, 7 inches, 5 00
- 153 German Silver Protractor,  $\frac{1}{2}$  Circle  $\frac{1}{4}$  Degrees inside Centre, 8 inches, 6 00
- 154 German Silver Protractor,  $\frac{1}{2}$  Circle  $\frac{1}{4}$  Degrees inside Centre, 10 inches, 7 50

## Whole Circle, Plain.

- 157 German Silver Protractor, Whole Circle,  $\frac{1}{2}$  Degrees, 6 inches . . \$7 50
- 158 German Silver Protractor, Whole Circle,  $\frac{1}{4}$  Degrees, 8 inches . . 10 00
- 159 German Silver Protractor, Whole Circle,  $\frac{1}{4}$  Degrees, 10 inches . . 13 00

# Alteneder's German Silver Protractors.

Each instrument is stamped T. ALTENEDER, Phila.



## Half Circle, with Arm and Horn Centre.

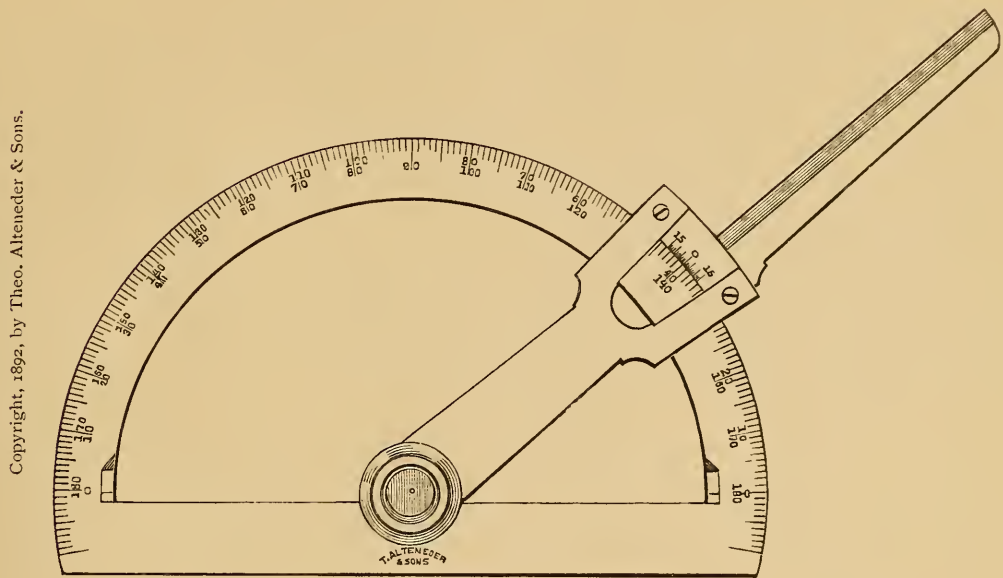
162	German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{2}$ Degrees, with Arm and Horn Centre, 5 inches diameter . . . . .	\$6 50
163	German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{2}$ Degrees, with Arm and Horn Centre, 6 inches diameter . . . . .	7 50
164	German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{2}$ Degrees, with Arm and Horn Centre, 7 inches diameter . . . . .	9 00
165	German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, with Arm and Horn Centre, 8 inches diameter . . . . .	11 00

## Whole Circle, with Arm and Horn Centre.

168	German Silver Protractor, Whole Circle $\frac{1}{2}$ Degrees, Arm and Horn Centre, 5 inches diameter . . . . .	\$10 00
169	German Silver Protractor, Whole Circle $\frac{1}{2}$ Degrees, Arm and Horn Centre, 6 inches diameter . . . . .	12 00
170	German Silver Protractor, Whole Circle $\frac{1}{4}$ Degrees, Arm and Horn Centre, 7 inches diameter . . . . .	14 00
171	German Silver Protractor, Whole Circle $\frac{1}{4}$ Degrees, Arm and Horn Centre, 8 inches diameter . . . . .	16 00

# Alteneder's German Silver Protractors.

Each instrument is stamped T. ALTENEDEK, Phila.



## Half Circle, with Arm and Vernier.

- |     |   |        |
|-----|---|--------|
| 174 | German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{2}$ Degrees, with Arm and Vernier, reading to 3 minutes, 5 inches diameter . . . . . | \$9 00 |
| 175 | German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{2}$ Degrees, with Arm and Vernier, reading to 3 minutes, 6 inches diameter . . . . . | 11 00  |
| 176 | German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, with Arm and Vernier, reading to 1 minute, 7 inches diameter . . . . .  | 12 00  |
| 177 | German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, with Arm and Vernier, reading to 1 minute, 8 inches diameter . . . . .  | 14 00  |
| 178 | German Silver Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, with Arm and Vernier, reading to 1 minute, 10 inches diameter . . . . . | 17 00  |

## Whole Circle, Arm and Vernier.

- |     |   |         |
|-----|---|---------|
| 180 | German Silver Protractor, Whole Circle $\frac{1}{2}$ Degrees, with Arm and Vernier, reading to 3 minutes, 5 inches diameter . . . . . | \$14 00 |
| 181 | German Silver Protractor, Whole Circle $\frac{1}{2}$ Degrees, with Arm and Vernier, reading to 3 minutes, 6 inches diameter . . . . . | 15 00   |
| 182 | German Silver Protractor, Whole Circle $\frac{1}{4}$ Degrees, with Arm and Vernier, reading to 1 minute, 8 inches diameter . . . . .  | 16 00   |
| 183 | German Silver Protractor, Whole Circle $\frac{1}{4}$ Degrees, with Arm and Vernier, reading to 1 minute, 10 inches diameter . . . . . | 19 00   |

# Alteneder's Improved Protractor.

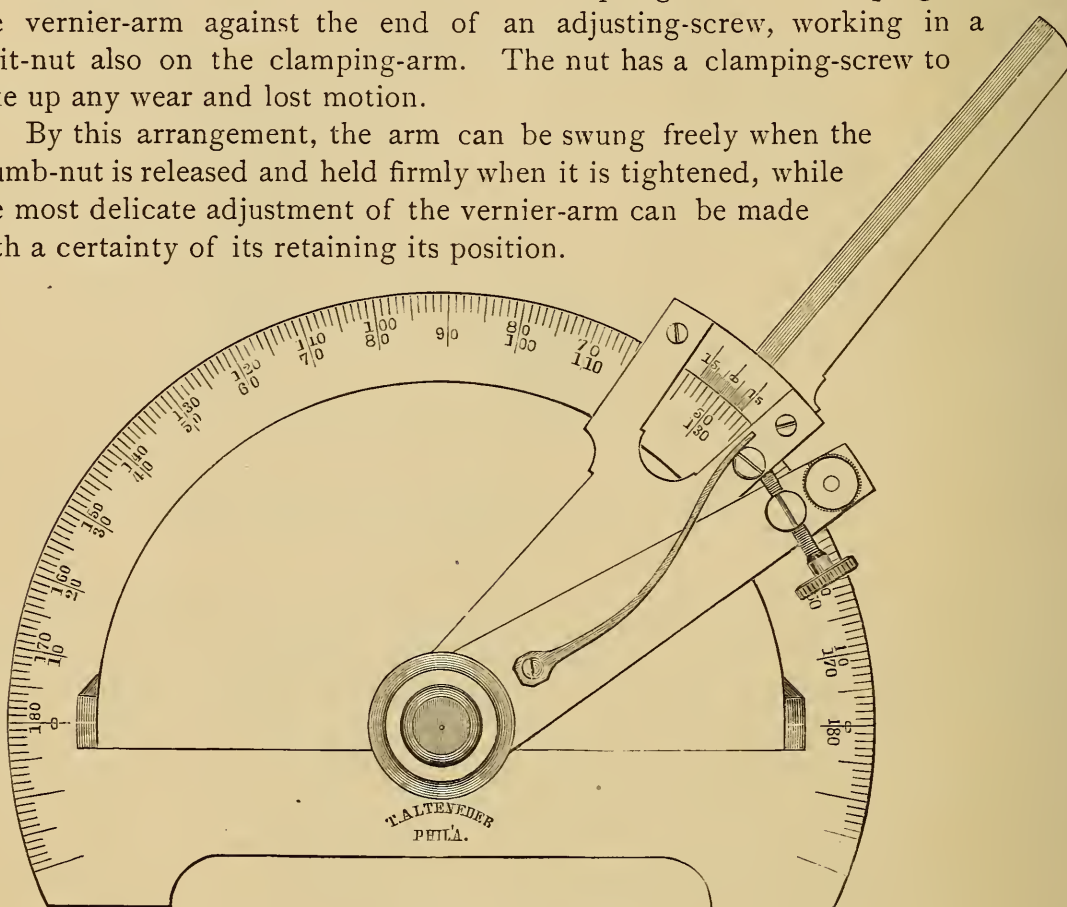
With Arm, Vernier and Micrometer Adjustment.

Each instrument is stamped T. ALTENEDER, Phila.

This is the most convenient, accurate and reliable instrument of the kind that is made. It has a clamping-arm held rigidly at any part of the circle by means of a shoe and thumb-nut. A spring on this clamping-arm holds the vernier-arm against the end of an adjusting-screw, working in a split-nut also on the clamping-arm. The nut has a clamping-screw to take up any wear and lost motion.

By this arrangement, the arm can be swung freely when the thumb-nut is released and held firmly when it is tightened, while the most delicate adjustment of the vernier-arm can be made with a certainty of its retaining its position.

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Half Circle.

- |   |         |
|---|---------|
| 185 Improved Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, reading to 1 minute, 7-inch  | \$20 00 |
| 186 Improved Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, reading to 1 minute, 8-inch  | 22 00   |
| 187 Improved Protractor, $\frac{1}{2}$ Circle $\frac{1}{4}$ Degrees, reading to 1 minute, 10-inch | 25 00   |

## Whole Circle.

- |   |         |
|---|---------|
| 190 Improved Protractor, Whole Circle $\frac{1}{4}$ Degrees, reading to 1 minute, |         |
| 7-inch . . . . .  | \$23 00 |
| 191 Improved Protractor, Whole Circle $\frac{1}{4}$ Degrees, reading to 1 minute, |         |
| 8-inch . . . . .  | 25 00   |
| 192 Improved Protractor, Whole Circle $\frac{1}{4}$ Degrees, reading to 1 minute, |         |
| 10-inch . . . . .   | 28 00   |



Walnut Boxes for Protractors.

For Half Circle, Plain.

5-inch . . . . .	\$0 60
6-inch . . . . .	60
7-inch . . . . .	70
8-inch . . . . .	80
10-inch . . . . .	1 00

For Whole Circle, Plain.

6-inch . . . . .	\$0 75
8-inch . . . . .	1 00
10-inch . . . . .	1 25

For Half Circle, Plain Arm,  
or  
Half Circle, Arm and Vernier.

5-inch . . . . .	\$1 40
6-inch . . . . .	1 40
7-inch . . . . .	1 50
8-inch . . . . .	1 65
10-inch . . . . .	1 85

For Whole Circle, Plain Arm,  
or  
Whole Circle, Arm <sup>AND</sup> Vernier.

5-inch . . . . .	\$1 65
6-inch . . . . .	1 65
8-inch . . . . .	2 00
10-inch . . . . .	2 20

For Half Circle, with Arm,  
Vernier and Micrometer  
Adjustment.

7-inch . . . . .	\$1 75
8-inch . . . . .	2 00
10-inch . . . . .	2 25

For Whole Circle, with Arm,  
Vernier and Micrometer  
Adjustment.

7-inch . . . . .	\$2 10
8-inch . . . . .	2 35
10-inch . . . . .	2 50

## Instruments in Cases.

IN selecting a set of instruments, the purchaser is not confined to those listed on the following pages. We make to order cases to suit any special selection of instruments which the draughtsman may consider adapted to his line of work.

A good way for a draughtsman to perfect his outfit is to purchase the instruments singly, according as his requirements or his desires suggest, and, after waiting a sufficient time to determine that his needs are completely filled, to have a case made to properly hold the instruments which he has purchased from time to time; or, if he has determined which instruments he will require, he may order a case fitted to contain them and order with the case only such instruments as are necessary for his present needs, and add the balance singly until the set is complete.



The Morocco Cases are of the best quality, lined with purple velvet and covered with real morocco leather which is more satisfactory as regards wear than the cheap imitations of leather usually used. These cases can be conveniently carried in the pocket and are to be preferred where the user has occasion to carry his instruments outside of the office.



The Mahogany Cases are made of well-seasoned wood, finely polished and fitted with good locks and German silver name-plate. They are made with a loose cushion in lid, under which is space for a protractor, triangles, etc. Under the tray is space for ink, colors, scales, etc. The trays are lined with purple velvet and the workmanship of the cases is first-class in every way. We furnish Walnut Cases in place of Mahogany, if desired.

A nickel-plated case (No. 147) for holding leads is fitted in each Morocco and Mahogany Case.

It is advisable to have cases for instruments, both as a convenience in handling and as a protection for the instruments; it keeps the instruments in better condition, and, as each tool has its separate space, saves time in handling. The points of the dividers and pens are also less liable to be injured. In this way and in the saving of time a case will pay for itself in a short time.

## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."



230

230 Morocco Case, containing :

- |   |   |         |
|---|---|---------|
| No. 5 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pen.             | } | \$10 75 |
| No. 6 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pencil.          |   |         |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch, Ebony Handle. |   |         |

231 Morocco Case, containing :

- |  |   |         |
|--|---|---------|
| No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.      | } | \$13 75 |
| No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil. * |   |         |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch, Ebony Handle.                          |   |         |

232 Morocco Case, containing :

- |  |   |         |
|--|---|---------|
| No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.    | } | \$18 50 |
| No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil. |   |         |
| No. 9 A. Improved Hair-Spring Dividers, $3\frac{1}{2}$ -inch.  |   |         |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch, Ebony Handle.                        |   |         |

233 Morocco Case, containing :

- |   |   |        |
|---|---|--------|
| No. 4 $\frac{1}{2}$ Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar. | } | \$9 50 |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch, Ebony Handle.                                 |   |        |

234 Morocco Case, containing :

- |  |   |         |
|--|---|---------|
| No. 4 $\frac{1}{2}$ A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$11 00 |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch, Ebony Handle.  |   |         |



## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.." or with Trade-Mark "T. A."



238

### 238 Morocco Case, containing:

- |  |   |         |
|--|---|---------|
| No. 4 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Pen and Pencil.                       | } | \$12 25 |
| No. 9 Hair-Spring Dividers, $3\frac{1}{2}$ inches long.  |   |         |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{2}$ -inch, Spring on Upper Blade, Ebony Handle. |   |         |

### 239 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 4 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen and Pencil. | } | \$14 75 |
| No. 9 A. Improved Hair-Spring Dividers, 3-inch.   |   |         |
| No. 16 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{2}$ -inch, Spring on Upper Blade, Ebony Handle.      |   |         |

### 240 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 4 $\frac{1}{2}$ Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar. | } | \$22 25 |
| No. 9 Hair-Spring Dividers, $3\frac{1}{2}$ inches long.   |   |         |
| Nos. 11 A., 12 A., 13 A. Spring Bow Instruments, 2-inch.  |   |         |
| Nos. 15 $\frac{1}{2}$ and 16 $\frac{1}{2}$ Improved Ruling Pens, 5 and $4\frac{1}{4}$ inch.                   |   |         |

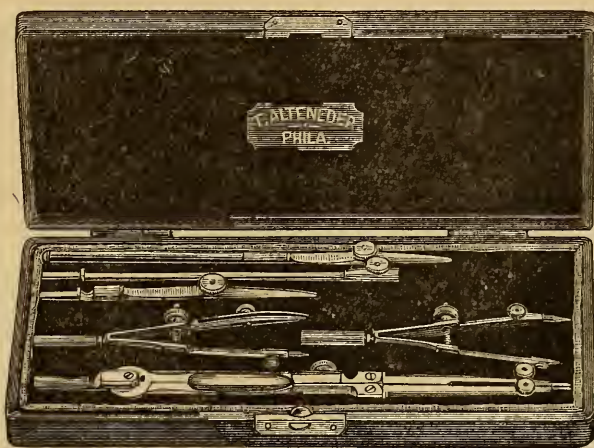
### 241 Morocco Case, containing:

- |  |   |         |
|--|---|---------|
| No. 4 $\frac{1}{2}$ A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$24 75 |
| No. 9 A. Improved Hair-Spring Dividers, 3-inch.  |   |         |
| Nos. 11 A., 12 A., 13 A. Spring Bow Instruments, 2-inch.   |   |         |
| Nos. 15 $\frac{1}{2}$ and 16 $\frac{1}{2}$ Improved Ruling Pens, 5 and $4\frac{1}{4}$ inch.  |   |         |



## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."



245

245 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 1 Dividers, 5½-inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$15 75 |
| * No. 12 Spring Bow Pencil, 3-inch.   |   |         |
| No. 13 Spring Bow Pen, 3-inch.  |   |         |
| No. 15½ Improved Ruling Pen, 5-inch, Spring on Upper<br>Blade, Ebony Handle.          |   |         |

\* The No. 12 is furnished with two steel points, so that it may be used as a spacer.

246 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 1 Dividers, 5½-inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$17 75 |
| Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.                                       |   |         |
| No. 15½ Improved Ruling Pen, 5-inch, Spring on Upper<br>Blade, Ebony Handle.          |   |         |

248 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 1 A. Dividers, 5½-inch, fixed Needle Point, with Hair-<br>Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$19 25 |
| Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.   |   |         |
| No. 15½ Improved Ruling Pen, 5-inch, Spring on Upper<br>Blade, Ebony Handle.                                      |   |         |

249 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 1 Dividers, 5½-inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$25 25 |
| No. 4 Dividers, 3½-inch, fixed Needle Point, with Pen<br>and Pencil.                  |   |         |
| Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.                                       |   |         |
| Nos. 15½, 16½ Improved Ruling Pens, 4¼ and 5 inch.                                    |   |         |

## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."



254

254 Morocco Case, containing :

No. 1 Dividers,  $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.

No. 10 Hair-Spring Dividers, 5-inch.

Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.

Nos.  $15\frac{1}{2}$  and  $16\frac{1}{2}$  Improved Ruling Pens,  $4\frac{1}{4}$  and 5 inch.

\$23 50

255 Morocco Case, containing :

No. 1 A. Dividers,  $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.

No. 10 A. Improved Hair-Spring Dividers, 5-inch.

Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.

Nos.  $15\frac{1}{2}$  and  $16\frac{1}{2}$  Improved Ruling Pens,  $4\frac{1}{4}$  and 5 inch.

\$26 00

258 Morocco Case, containing :

No. 1 Dividers,  $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.

No. 5 Dividers,  $3\frac{1}{2}$ -inch, fixed Needle Point and Pen.

No. 6 Dividers,  $3\frac{1}{2}$ -inch, fixed Needle Point and Pencil.

No. 10 Hair-Spring Dividers, 5-inch.

Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.

Nos.  $15\frac{1}{2}$  and  $16\frac{1}{2}$  Improved Ruling Pens,  $4\frac{1}{4}$  and 5 inch.

\$31 75

## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."

### 259 Morocco Case, containing :

No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.	}	\$37 25
No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.		
No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil.		
No. 10 A. Improved Hair-Spring Dividers, 5-inch.		
Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.		
Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.		

### 262 Morocco Case, containing :

No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.	}	\$31 00
No. 10 Hair-Spring Dividers, 5-inch.		
Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.		
Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.		
No. 118 Beam Compass, with Micrometer Adjustment, small size.		

### 263 Morocco Case, containing :

No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.	}	\$33 50
No. 10 A. Improved Hair-Spring Dividers, 5-inch.		
Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.		
Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.		
No. 118 Beam Compass, with Micrometer Adjustment, small size.		

### 266 Morocco Case, containing :

No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.	}	\$33 00
No. 10 Hair-Spring Dividers, 5-inch.		
Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.		
Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.		
No. 136 Proportional Dividers, $6\frac{1}{2}$ -inch, divided for Lines and Circles.		



## Instruments in Morocco Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."

### 267 Morocco Case, containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$35 50 |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. 15 $\frac{1}{2}$ and 16 $\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.                                |   |         |
| No. 136 Proportional Dividers, $6\frac{1}{2}$ -inch, divided for Lines and Circles.  |   |         |

### 269 Morocco Case, containing:

- |   |   |         |
|---|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar. | } | \$51 25 |
| No. 5 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pen.                               |   |         |
| No. 6 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pencil.                            |   |         |
| No. 10 Hair-Spring Dividers, 5-inch.  |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.  |   |         |
| Nos. 15 $\frac{1}{2}$ and 16 $\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.     |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment, small size.                                   |   |         |
| No. 137 Proportional Dividers, 8-inch, with Rack Movement, divided for Lines and Circles.       |   |         |

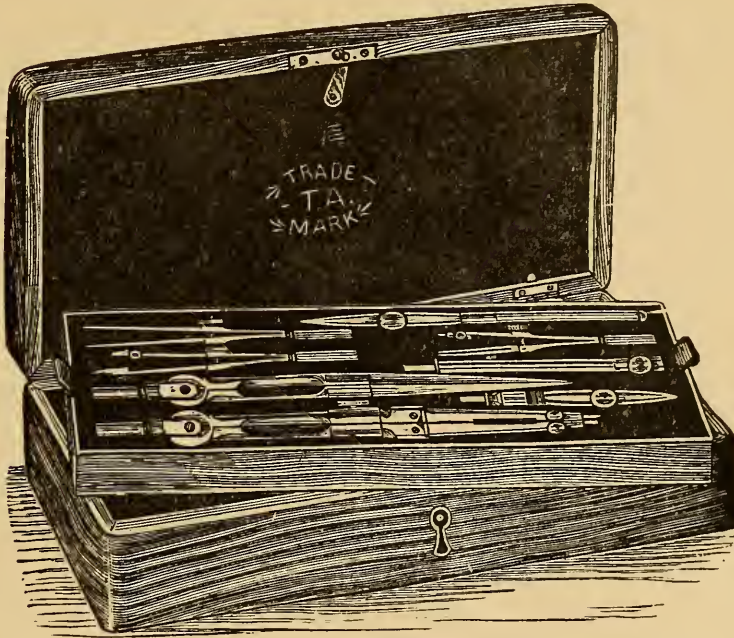
### 270 Morocco Case, containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$56 75 |
| No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.                          |   |         |
| No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil.                       |   |         |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. 15 $\frac{1}{2}$ and 16 $\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.                                |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment, small size.  |   |         |
| No. 137 Proportional Dividers, 8-inch, with Rack Movement, divided for Lines and Circles.                                  |   |         |



# Instruments in Mahogany Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."



353 Mahogany Case, Tray, Lock and Key, size of Tray  $5 \times 8\frac{3}{4}$ , containing :

- |  |   |         |
|--|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$24 00 |
| No. 8 Plain Dividers, 5-inch.  |   |         |
| Nos. 11, 12, 13 Spring Bow Instruments, 3 inch.  |   |         |
| No. 15 $\frac{1}{2}$ Improved Ruling Pen, $4\frac{1}{4}$ -inch.                                    |   |         |

354 Mahogany Case, Tray, Lock and Key, size of Tray  $5 \times 8\frac{3}{4}$ , containing :

- |  |   |         |
|--|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$27 00 |
| No. 10 Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.  |   |         |
| Nos. 15 $\frac{1}{2}$ , 16 $\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.          |   |         |

355 Mahogany Case, Tray, Lock and Key, size of Tray  $5 \times 8\frac{3}{4}$ , containing :

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-<br>Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$29 50 |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12, 13 Spring Bow Instruments, 3-inch.  |   |         |
| Nos. 15 $\frac{1}{2}$ , 16 $\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.                                      |   |         |

## Instruments in Mahogany Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."

356 Mahogany Case, Tray, Lock and Key, size of Tray  $6 \times 9\frac{1}{2}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$34 50 |
| No. 10 Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.          |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment,<br>small size.                                   |   |         |

357 Mahogany Case, Tray, Lock and Key, size of Tray  $6 \times 9\frac{1}{2}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-<br>Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$37 00 |
| No. 10 A Improved Hair-Spring Dividers, 5-inch.  |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.                                      |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment,<br>small size.   |   |         |

359 Mahogany Case, Tray, Lock and Key, size of Tray  $6 \times 9\frac{1}{2}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen,<br>Pencil and Lengthening Bar. | } | \$46 50 |
| No. 10 Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.          |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment,<br>small size.                                   |   |         |
| No. 137 Proportional Dividers, 8-inch, with Rack Move-<br>ment, divided for Lines and Circles.     |   |         |

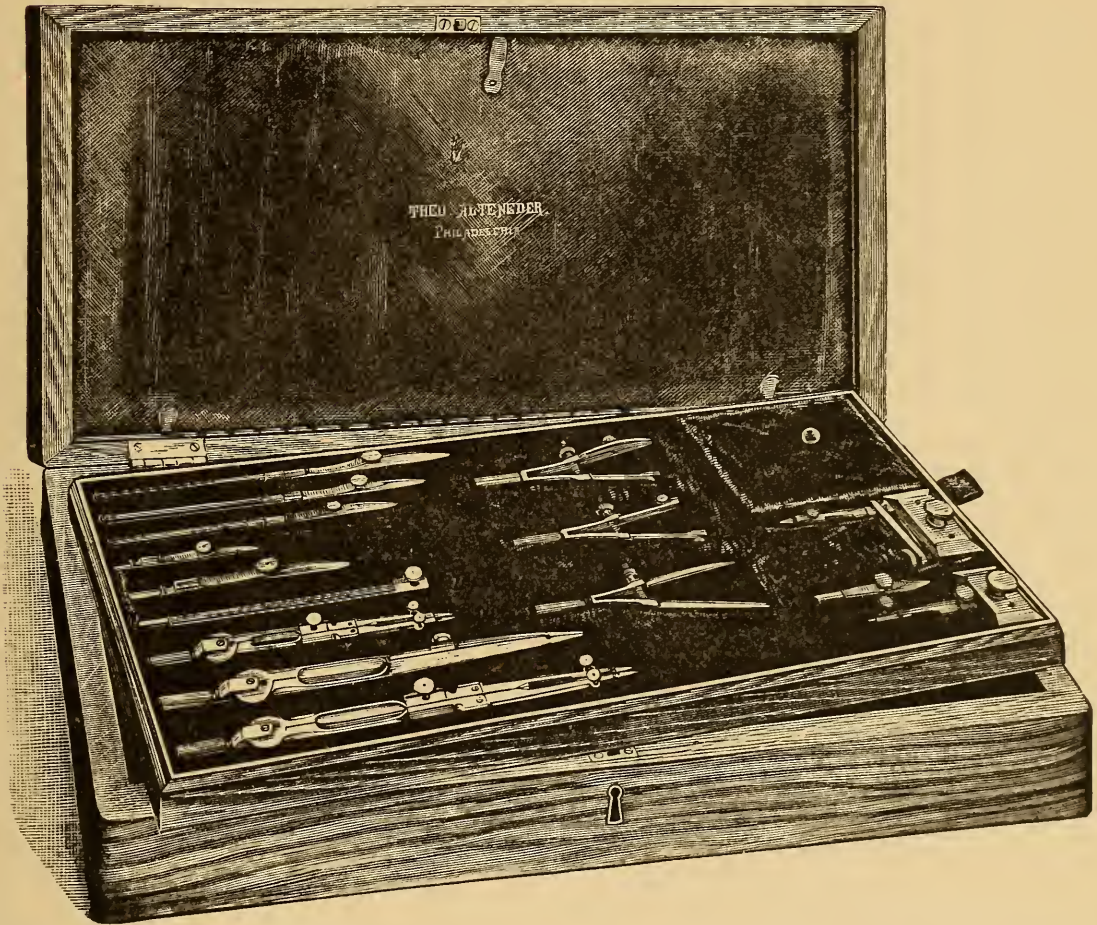
360 Mahogany Case, Tray, Lock and Key, size of Tray  $6 \times 9\frac{1}{2}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-<br>Spring Attachment, Pen, Pencil and Lengthening Bar. | } | \$49 00 |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $4\frac{1}{4}$ and 5 inch.                                      |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment,<br>small size.   |   |         |
| No. 137 Proportional Dividers, 8-inch, with Rack Move-<br>ment, divided for Lines and Circles.                                 |   |         |



# Instruments in Mahogany Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade Mark "T. A."



- 362 Mahogany Case, Tray, Lock and Key, size of Tray  $6\frac{1}{4} \times 13\frac{1}{4}$ , containing :
- No. 1 Dividers,  $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.
  - No. 4 Dividers,  $3\frac{1}{2}$ -inch, fixed Needle Point, with Pen and Pencil.
  - No. 10 Hair-Spring Dividers, 5-inch.
  - Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.
  - Nos.  $14\frac{1}{2}$ ,  $15\frac{1}{2}$  and  $16\frac{1}{2}$  Improved Ruling Pens,  $5\frac{1}{2}$ , 5 and  $4\frac{1}{4}$  inch.
  - No. 119 Beam Compass, with Micrometer Adjustment, large size.
- \$44 00
- 363 Mahogany Case, Tray, Lock and Key, size of Tray  $6\frac{1}{4} \times 13\frac{1}{4}$ , containing :
- No. 1 A. Dividers,  $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.
  - No. 4 A. Dividers,  $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen and Pencil.
  - No. 10 A. Improved Hair-Spring Dividers, 5-inch.
  - Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.
  - Nos.  $14\frac{1}{2}$ ,  $15\frac{1}{2}$  and  $16\frac{1}{2}$  Improved Ruling Pens,  $5\frac{1}{2}$ , 5 and  $4\frac{1}{4}$  inch.
  - No. 119 Beam Compass, with Micrometer Adjustment, large size.
- \$48 00

## Instruments in Mahogany Cases.

Each instrument is stamped "T. ALTENEDER, Phila.," or with Trade-Mark "T. A."

367 Mahogany Case, Tray, Lock and Key, size of Tray  $6\frac{1}{4} \times 13\frac{1}{4}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Pen, Pencil and Lengthening Bar.                              | } | \$54 00 |
| No. 5 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pen.  |   |         |
| No. 6 Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point and Pencil.   |   |         |
| No. 10 Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $14\frac{1}{2}$ , $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $5\frac{1}{2}$ , 5 and $4\frac{1}{4}$ inch. |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment, small size.  |   |         |
| No. 136 Proportional Dividers, $6\frac{1}{2}$ -inch, divided for Lines and Circles.  |   |         |

368 Mahogany Case, Tray, Lock and Key, size of Tray  $6\frac{1}{4} \times 13\frac{1}{4}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.   | } | \$59 50 |
| No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.                            |   |         |
| No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil.                         |   |         |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and 13 Spring Bow Instruments, 3-inch.   |   |         |
| Nos. $14\frac{1}{2}$ , $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $5\frac{1}{2}$ , 5 and $4\frac{1}{4}$ inch. |   |         |
| No. 118 Beam Compass, with Micrometer Adjustment, small size.  |   |         |
| No. 136 Proportional Dividers, $6\frac{1}{2}$ -inch, divided for Lines and Circles.  |   |         |

369 Mahogany Case, Tray, Lock and Key, size of Tray  $6\frac{1}{4} \times 13\frac{1}{4}$ , containing:

- |  |   |         |
|--|---|---------|
| No. 1 A. Dividers, $5\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment, Pen, Pencil and Lengthening Bar.   | } | \$73 50 |
| No. 5 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pen.                            |   |         |
| No. 6 A. Dividers, $3\frac{1}{2}$ -inch, fixed Needle Point, with Hair-Spring Attachment and Pencil.                         |   |         |
| No. 10 A. Improved Hair-Spring Dividers, 5-inch.   |   |         |
| Nos. 11, 12 and $13\frac{1}{2}$ Spring Bow Instruments, 3-inch.  |   |         |
| Nos. $14\frac{1}{2}$ , $15\frac{1}{2}$ and $16\frac{1}{2}$ Improved Ruling Pens, $5\frac{1}{2}$ , 5 and $4\frac{1}{4}$ inch. |   |         |
| No. $15\frac{1}{2}$ Nickel-Plated Red-Ink Pen, Ivory Handle.   |   |         |
| No. 17 Railroad Pen.   |   |         |
| No. 104 Swivel Curve Pen, Metal Handle.  |   |         |
| No. 107 Pricker, fixed Needle Point, Metal Cap.  |   |         |
| No. 119 Beam Compass, with Micrometer Adjustment, large size.  |   |         |
| No. 137 Proportional Dividers, 8-inch, with Rack Movement, divided for Lines and Circles.                                    |   |         |



## Draughting Scales.

WE have superior facilities for making scales of well-seasoned boxwood, of any desired form and with any required graduations. The graduations are cut deep and accurate and are at the same time sharp, distinct and permanent. Our scales are superior to most and equal to any others made.

There are four standard shapes in general use, each possessing its own advantages, and the choice between them depends principally upon the requirements and tastes of the user.

The Triangular Scale has the merit of possessing six surfaces for the graduations, so that six or (by doubling, as in the case of the Architect's and Mechanical Draughtsman's Scale) twelve different scales can be marked upon it. This is an advantage for anyone who desires the greatest range with one piece, but is objected to by many, and particularly the most active draughtsmen, on account of its obstinate tendency to present the wrong scale, and the annoying trouble of turning it over and over to obtain the right one.

The illustration shows the triangular scale with our protectors applied. These consist of two metal pieces, fastened one on each end of the scale; they are of the same shape as the end, but just sufficiently larger to prevent the graduations from coming into contact with the paper. They are a valuable addition if properly applied, as they keep the scale clean and prevent the graduations from wearing off.

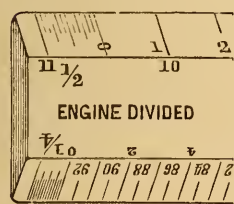
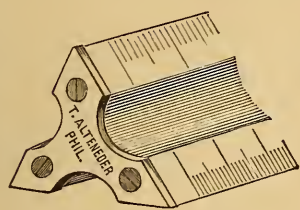
The Plain Flat Scale is probably more used by experts than any other shape. It has but two surfaces for the graduations, and, if these are different and the wrong one presented, it requires but one change to bring the right one. The graduations are more convenient to read than on the triangular scale, and are not subject to as much wear, as the graduated surfaces do not come into contact with the paper.

Our Opposite Bevel Scale is an improvement on the ordinary flat scale—it can be very quickly turned over and is readily picked up. It has also the advantage of presenting but one graduated surface to the eye when in use. It is furnished at the same price as the regular flat shape, and when desired should be specified.

The Flat Scale, Beveled on Both Sides, is a compromise between the flat and the triangular. It has four surfaces for the graduations, but requires to be held up in order to bring the edge down to the paper.

Special Scales. Experts, as a rule, have their scales made to order, to suit their methods of work. We are prepared to make any desired special scales, in which case it is advisable to furnish sketch, showing the plan of graduations and figuring desired.

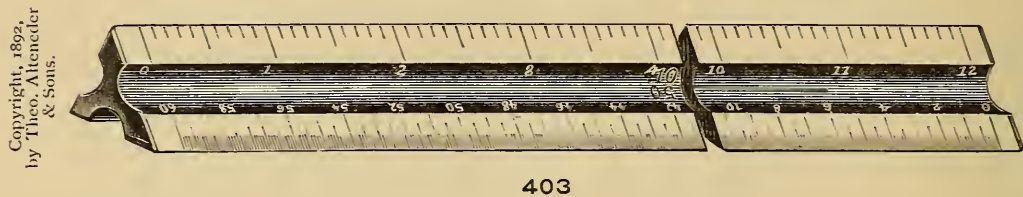
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Triangular Boxwood Scales.

ENGINE DIVIDED, U. S. STANDARD.

Divided in 10ths.



Triangular Boxwood Scale, Graduated 10, 20, 30, 40, 50 and 60 parts to the inch.

401	6 inches long . . . . .	\$0 80
403	12 inches long . . . . .	1 50
405	18 inches long . . . . .	2 50
406	24 inches long . . . . .	4 25

Triangular Boxwood Scale, Graduated 20, 30, 40, 50, 60 and 80 parts to the inch.

408	6 inches long . . . . .	\$0 80
410	12 inches long . . . . .	1 50
412	18 inches long . . . . .	2 50
413	24 inches long . . . . .	4 50

415 Triangular Boxwood Scale,  
Graduated 100, 200, 300, 400, 500 and 600 parts to the foot, \$1 50

Triangular Offset Scales.

416	2 inches long, to match Nos. 403 or 410 . . . . .	\$0 60
417	3 inches long, to match Nos. 403 or 410 . . . . .	75
418	$\frac{1}{16}$ of a foot long, to match No. 415 . . . . .	75

Triangular Metric Scales.

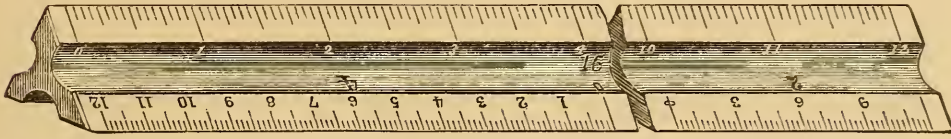
419	20 C. M. long . . . . .	\$1 65
420	30 C. M. long . . . . .	2 00
421	50 C. M. long . . . . .	3 25

# Triangular Boxwood Scales.

ENGINE DIVIDED, U. S. STANDARD.

Divided in 12ths.

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436

Triangular Boxwood Scale, graduated  $\frac{3}{32}$ ,  $\frac{3}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 3 inches to the foot, and one edge 16 to the inch.

430	6 inches long . . . . .	\$0 80
432	12 inches long . . . . .	1 50
434	18 inches long . . . . .	2 50
435	24 inches long . . . . .	4 25

Triangular Boxwood Scale, graduated  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1,  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $1\frac{1}{2}$ , 3, 2 and 4 inches to the foot, one edge 16 to the inch.

436	12 inches long . . . . .	\$1 50
438	18 inches long . . . . .	2 50
440	24 inches long . . . . .	4 25

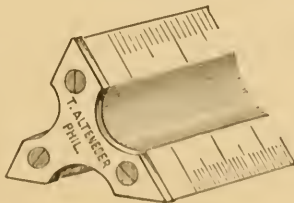
## Metallic Triangular Scales.

441	Metallic Triangular Scale, graduated 10 to 60, like No. 403 . . . . .	\$3 00
442	Metallic Triangular Scale, graduated 20 to 80, like No. 410 . . . . .	3 00
443	Metallic Triangular Scale, graduated $\frac{3}{32}$ to 3, like No. 432 . . . . .	3 00

## Alteneder's Scale Protectors

Consist of two metal caps (one on each end of scale), slightly projecting. This keeps the graduations from coming in contact with the paper; keeps the scale clean and prevents wear.

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445

445	Alteneder's Scale Protectors of German Silver placed on any Triangular Scale at an additional cost on each scale of . . . . .	\$0 75
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## Triangular Scale Guard.

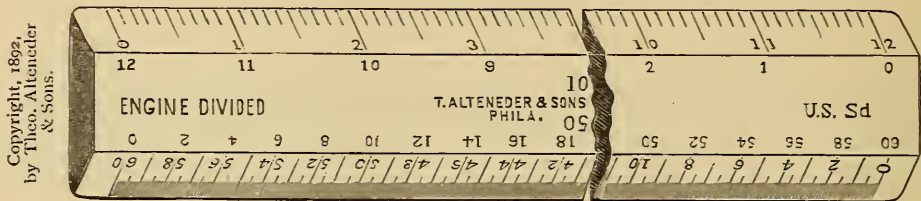
446	Triangular Scale Guard . . . . . each,	\$0 20
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Flat Boxwood Scales.

ENGINE DIVIDED, U. S. STANDARD.

Divided in 10ths.



460

450	Flat Boxwood Scale, 6-inch, 10 x 50 parts to the inch . . . . .	\$0 50
451	Flat Boxwood Scale, 6-inch, 10 x 20 parts to the inch . . . . .	50
452	Flat Boxwood Scale, 6-inch, 20 x 40 parts to the inch . . . . .	50
453	Flat Boxwood Scale, 6-inch, 30 x 60 parts to the inch . . . . .	50
454	Flat Boxwood Scale, 6-inch, 40 x 80 parts to the inch . . . . .	80
455	Flat Boxwood Scale, 6-inch, 50 x 100 parts to the inch . . . . .	80
456	Flat Boxwood Scale, 6-inch, 80 x 100 parts to the inch . . . . .	1 00
<hr/>		
460	Flat Boxwood Scale, 12-inch, 10 x 50 parts to the inch . . . . .	\$0 75
461	Flat Boxwood Scale, 12-inch, 10 x 20 parts to the inch . . . . .	75
462	Flat Boxwood Scale, 12-inch, 20 x 40 parts to the inch . . . . .	75
463	Flat Boxwood Scale, 12-inch, 30 x 60 parts to the inch . . . . .	75
464	Flat Boxwood Scale, 12-inch, 40 x 80 parts to the inch . . . . .	1 25
465	Flat Boxwood Scale, 12-inch, 50 x 100 parts to the inch . . . . .	1 25
466	Flat Boxwood Scale, 12-inch, 80 x 100 parts to the inch . . . . .	1 50
<hr/>		
470	Flat Boxwood Scale, 12-inch, 100 x 500 parts to the foot . . . . .	\$1 00
471	Flat Boxwood Scale, 12-inch, 200 x 400 parts to the foot . . . . .	1 00
472	Flat Boxwood Scale, 12-inch, 300 x 600 parts to the foot . . . . .	1 00
473	Flat Boxwood Scale, 12-inch, 800 x 1000 parts to the foot . . . . .	1 50

Flat Boxwood Offset Scales.

474	Flat Boxwood Offset Scale, 2-inch, divided either 10 x 50, 10 x 20, 20 x 40 or 30 x 60 parts to the inch . . . . .	\$0 40
475	Flat Boxwood Offset Scale, 2-inch, divided either 40 x 80, 50 x 100 or 80 x 100 parts to the inch . . . . .	65
476	Flat Boxwood Offset Scale, 3-inch, divided either 10 x 50, 10 x 20, 20 x 40 or 30 x 60 parts to the inch . . . . .	60
477	Flat Boxwood Offset Scale, 3-inch, divided either 40 x 80, 50 x 100 or 80 x 100 parts to the inch . . . . .	85
478	Flat Boxwood Offset Scale, $\frac{2}{10}$ of a foot long, to match either 470, 471 or 472 . . . . .	40
479	Flat Boxwood Offset Scale, $\frac{2}{10}$ of a foot long, to match 473 . . . . .	60

Flat Boxwood Metric Scales.

480	Flat Boxwood Scale, 10 C. M. long . . . . .	\$0 50
481	Flat Boxwood Scale, 20 C. M. long . . . . .	60
482	Flat Boxwood Scale, 30 C. M. long . . . . .	75
483	Flat Boxwood Scale, 50 C. M. long . . . . .	1 50



# Flat Boxwood Scales.

ENGINE DIVIDED, U. S. STANDARD.

Divided in 12ths.

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502

## Flat Boxwood Scales, Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ and 1 Inch to the Foot.

500	6 inches long . . . . .	\$0 50
502	12 inches long . . . . .	75
503	12 $\frac{1}{2}$ inches long . . . . .	1 00
504	13 inches long . . . . .	1 15
506	18 inches long . . . . .	1 50
507	24 inches long . . . . .	2 00

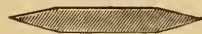
No. 503 measures 100 feet on  $\frac{1}{8}$ -inch scale, 50 feet on  $\frac{1}{4}$ -inch scale, 25 feet on  $\frac{1}{2}$ -inch scale.

No. 504 measures 100 feet on  $\frac{1}{8}$ -inch scale, 50 feet on  $\frac{1}{4}$ -inch scale, 25 feet on  $\frac{1}{2}$ -inch scale, excluding the sub-divided foot.

## Flat Boxwood Scales, Divided $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 Inches to the Foot.

510	6 inches long . . . . .	\$0 50
512	12 inches long . . . . .	75
514	18 inches long . . . . .	1 50
515	24 inches long . . . . .	2 00

## Flat Boxwood Scales, Bevelled on Both Sides.



## Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 Inches to the Foot.

516	6 inches long . . . . .	\$0 80
518	12 inches long . . . . .	1 20
520	18 inches long . . . . .	2 25
521	24 inches long . . . . .	3 00

523	Flat Boxwood Scale, 12-inch, half size and full size . . . . .	\$1 00
524	Flat Boxwood Scale, 12-inch, 16ths and 32ds . . . . .	1 00
525	Flat Boxwood Scale, 12-inch, 16ths and millimeters . . . . .	1 00
526	Flat Boxwood Scale, 12-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ . . . . .	75

## Second Quality Flat Scales.

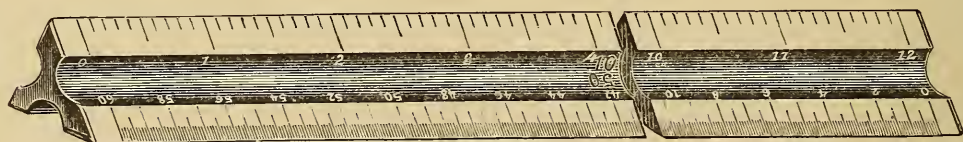
530	Flat Boxwood Scale, 6-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ and 1 inch to the foot . . . . .	\$0 35
531	Flat Boxwood Scale, 12-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ and 1 inch to the foot . . . . .	50
533	Flat Boxwood Scale, 6-inch, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 inches to the foot . . . . .	35
534	Flat Boxwood Scale, 12-inch, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 inches to the foot . . . . .	50
536	Flat Boxwood Scale, 6-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ , 3 . . . . .	50
538	Flat Boxwood Scale, 12-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ , 3 . . . . .	75

# Triangular White-Edge Scales.

ENGINE DIVIDED, U. S. STANDARD.

These scales are a combination of boxwood and celluloid; the body of the scale is made of well-seasoned boxwood and the edges of dull white celluloid, fastened to the wood. The graduations and figures are blackened, which shows a black line on a white ground. They meet with some favor among draughtsmen, as they tire the eyes less than any other scales made. They are made in all the different shapes described on page 47.

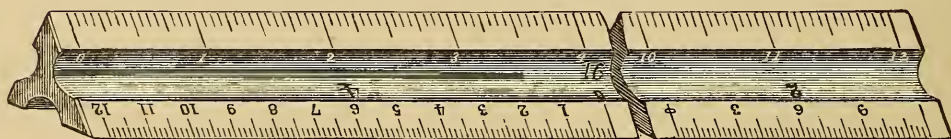
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& Sons.



403 W.

- 401 W. Triangular White-Edge Scale, 6 inches long, divided 10, 20, 30, 40, 50 and 60 parts to the inch . . . . . \$2 00
- 403 W. Triangular White-Edge Scale, 12 inches long, divided 10, 20, 30, 40, 50 and 60 parts to the inch . . . . . 3 00
- 408 W. Triangular White-Edge Scale, 6 inches long, divided 20, 30, 40, 50, 60 and 80 parts to the inch . . . . . 2 00
- 410 W. Triangular White-Edge Scale, 12 inches long, divided 20, 30, 40, 50, 60 and 80 parts to the inch . . . . . 3 00

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436 W.

- 430 W. Triangular White-Edge Scale, 6 inches long, divided  $\frac{3}{16}$ ,  $\frac{3}{32}$ ,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$  and 3 inches to the foot, and one edge 16 to the inch . . . . . \$2 00
- 432 W. Triangular White-Edge Scale, 12 inches long, divided  $\frac{3}{16}$ ,  $\frac{3}{32}$ ,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$  and 3 inches to the foot, and one edge 16 to the inch . . . . . 3 00
- 436 W. Triangular White-Edge Scale, 12 inches long, divided  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1,  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $1\frac{1}{2}$ , 3, 2 and 4 inches to the foot, and one edge 16 to the inch . . . . . 3 00

Flat White-Edge Scales.

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502 W.

Divided in 12ths.

Flat White-Edge Scales, divided  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1 inch to the foot.

500 W.	6 inches long . . . . .	\$0 85
502 W.	12 inches long . . . . .	1 25
503 W.	12 $\frac{1}{2}$ inches long . . . . .	1 50
504 W.	13 inches long . . . . .	1 75
506 W.	18 inches long . . . . .	2 25
507 W.	24 inches long . . . . .	3 00

No. 503 W. measures 100 feet on  $\frac{1}{8}$ -inch scale, 50 feet on  $\frac{1}{4}$ -inch scale and 25 feet on  $\frac{1}{2}$ -inch scale.

No. 504 W. measures 100 feet on  $\frac{1}{8}$ -inch scale, 50 feet on  $\frac{1}{4}$ -inch scale and 25 feet on  $\frac{1}{2}$ -inch scale, excluding the sub-divided foot.

Flat White-Edge Scales, divided  $\frac{3}{8}$ ,  $\frac{3}{4}$ , 1  $\frac{1}{2}$  and 3 inches to the foot.

510 W.	6 inches long . . . . .	\$0 85
512 W.	12 inches long . . . . .	1 25
514 W.	18 inches long . . . . .	2 25
515 W.	24 inches long . . . . .	3 00

Flat White-Edge Scales, Beveled on Both Sides.



Divided  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1,  $\frac{3}{8}$ ,  $\frac{3}{4}$ , 1  $\frac{1}{2}$  and 3 inches to the foot.

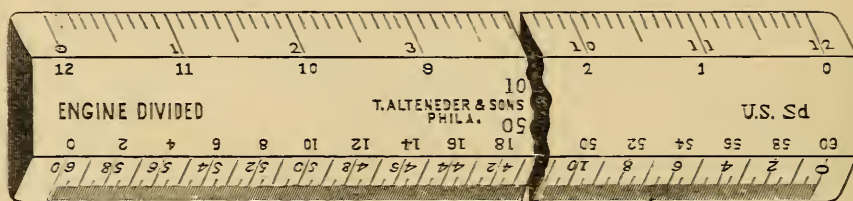
516 W.	6 inches long . . . . .	\$1 35
518 W.	12 inches long . . . . .	2 00

523 W.	Flat White-Edge Scale, 12-inch, half size and full size . . . . .	\$1 50
524 W.	Flat White-Edge Scale, 12-inch, 16ths and 32ds . . . . .	1 50
525 W.	Flat White-Edge Scale, 12-inch, 16ths and millimeters . . . . .	1 50
526 W.	Flat White-Edge Scale, 12-inch, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{4}$ , 1 $\frac{1}{2}$ . . . . .	1 25



# Flat White-Edge Scales.

ENGINE DIVIDED, U. S. STANDARD.

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460 W.

Divided in 10ths.

450 W.	Flat White-Edge Scale, 6-inch, 10 x 50 parts to the inch . . . .	\$0 85
451 W.	Flat White-Edge Scale, 6-inch, 10 x 20 parts to the inch . . . .	85
452 W.	Flat White-Edge Scale, 6-inch, 20 x 40 parts to the inch . . . .	85
453 W.	Flat White-Edge Scale, 6-inch, 30 x 60 parts to the inch . . . .	85
454 W.	Flat White-Edge Scale, 6-inch, 40 x 80 parts to the inch . . . .	1 25
455 W.	Flat White-Edge Scale, 6-inch, 50 x 100 parts to the inch . . . .	1 25
456 W.	Flat White-Edge Scale, 6-inch, 80 x 100 parts to the inch . . . .	1 35
<hr/>		
460 W.	Flat White-Edge Scale, 12-inch, 10 x 50 parts to the inch . . . .	\$1 25
461 W.	Flat White-Edge Scale, 12-inch, 10 x 20 parts to the inch . . . .	1 25
462 W.	Flat White-Edge Scale, 12-inch, 20 x 40 parts to the inch . . . .	1 25
463 W.	Flat White-Edge Scale, 12-inch, 30 x 60 parts to the inch . . . .	1 25
464 W.	Flat White-Edge Scale, 12-inch, 40 x 80 parts to the inch . . . .	1 75
465 W.	Flat White-Edge Scale, 12-inch, 50 x 100 parts to the inch . . . .	1 75
466 W.	Flat White-Edge Scale, 12-inch, 80 x 100 parts to the inch . . . .	2 00
<hr/>		
470 W.	Flat White-Edge Scale, 12-inch, 100 x 500 parts to the foot . . . .	\$1 50
471 W.	Flat White-Edge Scale, 12-inch, 200 x 400 parts to the foot . . . .	1 50
472 W.	Flat White-Edge Scale, 12-inch, 300 x 600 parts to the foot . . . .	1 50
473 W.	Flat White-Edge Scale, 12-inch, 800 x 1000 parts to the foot . . . .	2 00

## Flat White-Edge Offset Scales.

474 W.	Flat White-Edge Offset Scale, 2-inch, divided either 10 x 50, 10 x 20, 20 x 40 or 30 x 60 parts to the inch . . . . .	\$0 70
475 W.	Flat White-Edge Offset Scale, 2-inch, divided either 40 x 80, 50 x 100 or 80 x 100 parts to the inch . . . . .	90
476 W.	Flat White-Edge Offset Scale, 3-inch, divided either 10 x 50, 10 x 20, 20 x 40 or 30 x 60 parts to the inch . . . . .	85
477 W.	Flat White-Edge Offset Scale, 3-inch, divided either 40 x 80, 50 x 100 or 80 x 100 parts to the inch . . . . .	1 00
478 W.	Flat White-Edge Offset Scale, $\frac{1}{10}$ of a foot long, to match 470 W., 471 W. or 472 W. . . . .	70
479 W.	Flat White-Edge Offset Scale, $\frac{1}{10}$ of a foot long, to match 473 W. . . . .	90

## Flat White-Edge Metric Scales.

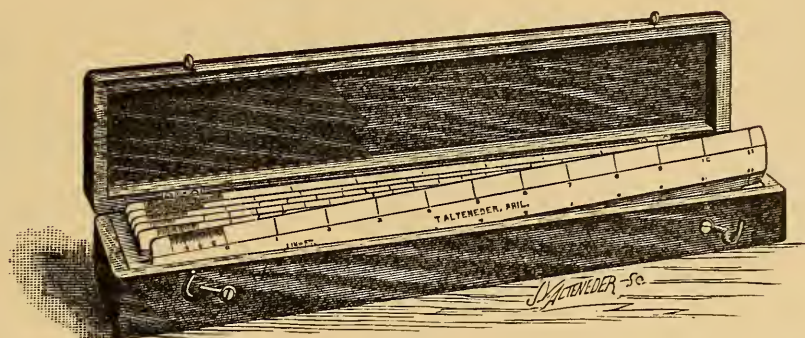
480 W.	Flat White-Edge Scale, 10 C. M. long . . . . .	\$0 90
481 W.	Flat White-Edge Scale, 20 C. M. long . . . . .	1 10
482 W.	Flat White-Edge Scale, 30 C. M. long . . . . .	1 35
483 W.	Flat White-Edge Scale, 50 C. M. long . . . . .	2 50



# Flat Scales in Sets.

In Partitioned Mahogany Boxes.

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No. 550 to 554 W. have a different scale on each edge; both edges are divided and figured to read both ways.

Set 550	4 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ and $\frac{1}{4}$ , $\frac{1}{2}$ and 1, $\frac{3}{8}$ and $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 inches to the foot . . . . .	\$4 25
Set 550 W.	4 White-Edge Scales, 12-inch. Same graduations as 550 . .	6 25
Set 552	6 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ and $\frac{1}{4}$ , $\frac{1}{2}$ and 1, $\frac{3}{8}$ and $\frac{3}{4}$ , $1\frac{1}{2}$ and 3, 2 and 4, 6 and 12 inches to the foot . . . . .	6 00
Set 552 W.	6 White-Edge Scales, 12-inch. Same graduations as 552 . .	9 00
Set 554	6 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ and $\frac{1}{4}$ , $\frac{1}{2}$ and 1, $\frac{3}{8}$ and $\frac{3}{4}$ , $1\frac{1}{2}$ and 3, $\frac{3}{2}$ and $1\frac{3}{4}$ , 6 and 12 inches to the foot . . . . .	6 00
Set 554 W.	6 White-Edge Scales, 12-inch. Same graduations as 554 . .	9 00

No. 556 to 562 W. have the same scale on both edges; one edge is divided and figured to read from left to right, and the other from right to left.

Set 556	4 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ and 1 inch to the foot . . . . .	4 25
Set 556 W.	4 White-Edge Scales, 12-inch. Same graduations as 556 . .	6 25
Set 558	8 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ and 3 inches to the foot . . . . .	7 50
Set 558 W.	8 White-Edge Scales, 12-inch. Same graduations as 558 . .	11 50
Set 560	12 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ , 3, 2, 4, 6 and 12 inches to the foot . . . . .	11 00
Set 560 W.	12 White-Edge Scales, 12-inch. Same graduations as 560 . .	17 00
Set 562	12 Boxwood Scales, 12-inch.	
	Divided $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ , 1, $\frac{3}{8}$ , $\frac{3}{4}$ , $1\frac{1}{2}$ , 3, $1\frac{3}{4}$ , $2\frac{1}{4}$ , 6 and 12 inches to the foot . . . . .	11 00
Set 562 W.	12 White-Edge Scales, 12-inch. Same graduations as 562 . .	17 00

# Flat Scales in Sets.

## In Partitioned Mahogany Boxes.

No. 568 to 570 have a different scale on each edge, figured to read both ways.

Set 568 4 Boxwood Scales, 12-inch.

Divided 10 and 50, 20 and 40, 30 and 60, 80 and 100  
parts to the inch . . . . . \$5 00

Set 568 W. 4 White-Edge Scales, 12-inch.

Same graduations as 568 . . . . . 7 00

Set 570 8 Boxwood Scales.

4 12-inch, divided 10 and 50, 20 and 40, 30 and 60, }  
80 and 100 parts to the inch. } 7 75  
4 2-inch Offset Scales to match.

Set 570 W. 8 White-Edge Scales.

4 12-inch, }  
4 2-inch Offset Scales to match, } same graduations as 570 10 90

No. 572 to 578 have the same scale on both edges, each edge is figured to read both ways.

Set 572 6 Boxwood Scales, 12-inch.

Divided 10, 20, 30, 40, 50 and 60 parts to the inch . . 6 00

Set 572 W. 6 White-Edge Scales, 12-inch.

Same graduations as 572 . . . . . 9 00

Set 574 12 Boxwood Scales.

6 12-inch, divided 10, 20, 30, 40, 50 and 60 parts to }  
the inch. } 9 25  
6 2-inch Offset Scales to match.

Set 574 W. 12 White-Edge Scales.

6 12-inch, }  
6 2-inch Offset Scales to match, } same graduations as 574 14 00

Set 576 8 Boxwood Scales, 12-inch.

Divided 10, 20, 30, 40, 50, 60, 80 and 100 parts to  
the inch . . . . . 9 50

Set 576 W. 8 White-Edge Scales, 12-inch.

Same graduations as 576 . . . . . 13 50

Set 578 16 Boxwood Scales,

8 12-inch, divided 10, 20, 30, 40, 50, 60, 80 and 100 }  
parts to the inch. } 15 50  
8 2-inch Offset Scales to match above.

Set 578 W. 16 White-Edge Scales.

8 12-inch, }  
8 2-inch Offset Scales to match, } same graduations as 578 21 50

Special Sets, containing any number of Scales, and with any desired graduations, made to order.

# Hard Rubber Triangles.



600



601



602

## Open, Inside Corners Round.

600 Hard Rubber Triangles, 30° x 60°.

3	4	5	6	7	8	9	10	11	12	13	14	15	16 inch
\$0 20	25	30	35	40	50	60	70	80	90	1 00	1 25	1 50	1 75

601 Hard Rubber Triangles, 45°.

3	4	5	6	7	8	9	10	11	12	13	14	15	16 inch
\$0 25	35	40	45	55	70	80	1 00	1 20	1 35	1 55	1 80	2 10	2 40

602 Hard Rubber Triangles, 22½° x 67½°.

3	4	5	6	7	8	9	10	11	12	13	14	15	16 inch
\$0 20	25	30	35	40	50	60	70	80	90	1 00	1 25	1 50	1 75

## Solid.

604 Hard Rubber Triangles, Solid, 30° x 60°.

3	4	5	6	7	8	9	10	11	12 inch
\$0 15	0 18	0 22	0 25	0 30	0 35	0 40	0 50	0 60	0 70

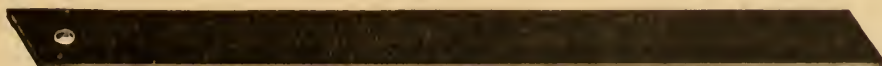
605 Hard Rubber Triangles, Solid, 45°.

3	4	5	6	7	8	9	10	11	12 inch
\$0 15	0 20	0 25	0 35	0 40	0 45	0 50	0 60	0 70	0 80



608

608 Hard Rubber Lettering Angles, 3 in set, per set . . . . . \$1 25



610

610 Hard Rubber Straight Edges.

12	15	18	24	30	36	42 inch
\$0 35	0 40	0 50	0 75	1 00	1 50	2 00



Hard Rubber Curves.



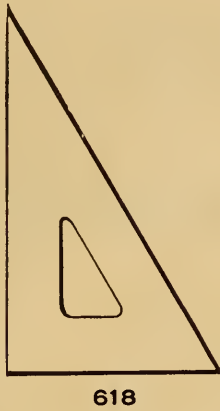
615

615 Hard Rubber Curves.

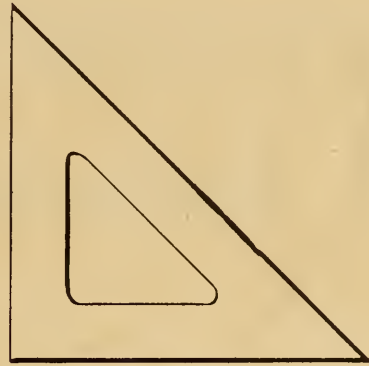
No. 1	2	3	4	5	6	7	8	9	10	11	12	13
\$0 25	30	30	35	35	35	40	40	40	40	40	30	40
No. 14	15	16	17	18	19	20	21	22	23	24	25	
\$0 50	50	50	55	60	60	55	60	65	75	75	1 00	

# Transparent Triangles.

Made of an Amber-Colored Celluloid, Very Transparent.



618



619

618 Transparent Triangles, 30° x 60°.

4	5	6	7	8	9	10	11	12	13	14	15	16
\$0 30	35	40	50	60	70	80	1 00	1 15	1 45	1 75	2 10	2 40

619 Transparent Triangles, 45°.

4	5	6	7	8	9	10	11	12	13	14	15	16
\$0 40	50	60	70	80	1 00	1 15	1 45	1 75	2 10	2 40	2 75	3 25

621 Transparent Lettering Angles, 3 in set, per set . . . . . \$1 75

## Transparent Irregular Curves.

623

For Illustrations of Patterns, see Page 58.

Nos. 1	2	3	4	5	6	7	8	9	10	11	12	13	14
\$0 40	40	45	45	45	50	50	50	55	65	55	50	70	75
Nos. 15	16	17	18	19	20	21	22	23	24	25			
\$0 85	0 85	1 00	1 00	1 10	1 10	1 00	1 10	1 25	1 20	1 75			

## T Squares, with Transparent Edges.

625 Mahogany Fixed Head T Square, Head Ebony Lined, Blade with Transparent Edges.

6	9	12	15	18	24	30	36	42	48
\$0 50	0 60	0 75	0 90	1 10	1 50	2 00	2 40	2 90	3 75

## Straight Edges, with Transparent Edges.

626 Mahogany Straight Edges, with Transparent Edges.

12	15	18	24	30	36	42	48
\$0 45	0 55	0 70	1 00	1 25	1 75	2 50	3 50

## Fixed Head T Squares.



630

632

630 Fixed Walnut Head, Maple Lined Ash-Wood Blade.

18	24	30	36	42	48	54	60 inch
\$0 85	1 00	1 10	1 20	1 40	1 65	2 15	2 60

632 Fixed Mahogany Ebony-Lined Head and Blade.

18	24	30	36	42	48	54	60 inch
\$1 00	1 15	1 40	1 65	1 90	2 40	3 10	3 75

634 Fixed Mahogany Ebony-Lined Head and Blade, extra well made and finely polished.

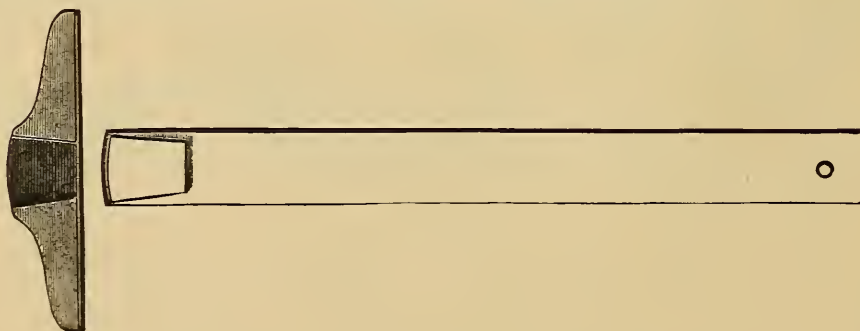
18	24	30	36	42	48	54	60 inch
\$1 50	1 75	2 20	2 60	3 00	3 65	4 50	5 50

635 Fixed Walnut Head, Maple Blade.

18	24	30	36	42	48	54	60
\$0 50	0 75	0 90	1 00	1 10	1 25	1 60	1 90

636 Fixed Head T Squares, Walnut Head, Rubber Blade.

12	15	18	24	30	36 inch
\$0 60	0 75	0 85	1 20	1 50	1 85



637

637 Mahogany Dovetail Head, Maple Blade.

18	24	30	36	42	48
\$0 75	0 90	1 00	1 25	1 50	2 00



# Swivel T Squares.

Copyright, 1892, by Theo. Alteneder & Sons.



640

The T Square above illustrated is an instrument which we can recommend. It has two clamping screws, one at the pivot in the usual way and an additional one near the short end of the blade which works in a circular slot concentric with the pivot. The swivels are well made and the wood carefully selected. The head is readily detached from the blade and several blades of different lengths may be used with the same head. This instrument has never failed to satisfy our most critical customers.

640 Swivel Head T Square, two Clamp Screws, Mahogany Ebony-Lined Head, Maple Blade.

30	36	42	48	54	60	66	72 inch
\$3 50	4 00	4 50	5 00	5 50	6 00	6 50	7 00

642 Swivel Head T Square, two Clamp Screws, Mahogany Ebony-Lined Head and Blade, finely polished.

30	36	42	48	54	60	66	72 inch
\$4 50	5 00	5 50	6 00	6 75	7 50	8 25	9 00



644

643 Swivel T Square, Maple Blade, Double Shifting Walnut Head, with well-made Thumb-Screw Swivel.

24	30	36	42	48	54	60 inch
\$1 70	1 85	2 00	2 15	2 25	2 50	2 85

644 Swivel T Square, Mahogany Ebony-Lined Blade, Double Shifting Mahogany Ebony-Lined Head, with well-made Thumb-Screw Swivel.

24	30	36	42	48	54	60 inch
\$2 75	3 15	3 50	3 95	4 60	5 45	6 25

## Straight Edges.



646

646 Mahogany, Ebony Lined, Polished.

18	24	30	36	42	48	54	60 inch
\$0 50	0 60	0 75	1 00	1 25	1 65	2 00	2 50

648 Ash-Wood, Maple Lined.

18	24	30	36	42	48	54	60 inch
\$0 30	0 40	0 50	0 60	0 75	1 00	1 25	1 75

650 Steel Straight Edges, Square Edges.

Width,	1 1/4	1 1/4	1 1/2	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4 inch
Thickness,	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/4	1 1/2 inch
Length,	12	15	18	24	30	36	42	48	60 inch
	\$0 75	0 90	1 00	1 50	2 25	3 00	3 75	5 00	7 00

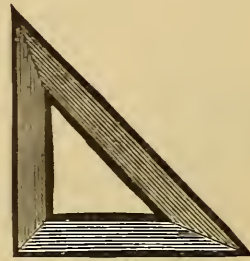
Steel Straight Edges, One Edge Beveled.

Width,	1 3/8	1 3/8	1 1/2	1 3/4	1 3/4	2	2	2 1/2
Length,	12	18	24	36	42	48	60	72
651 Plain,	\$1 25	1 50	2 75	4 50	5 25	6 00	9 00	11 50
652 Nickel-Plated,	1 50	1 75	3 00	5 00	6 00	8 00	10 50	14 00

## Wood Triangles.



664



666

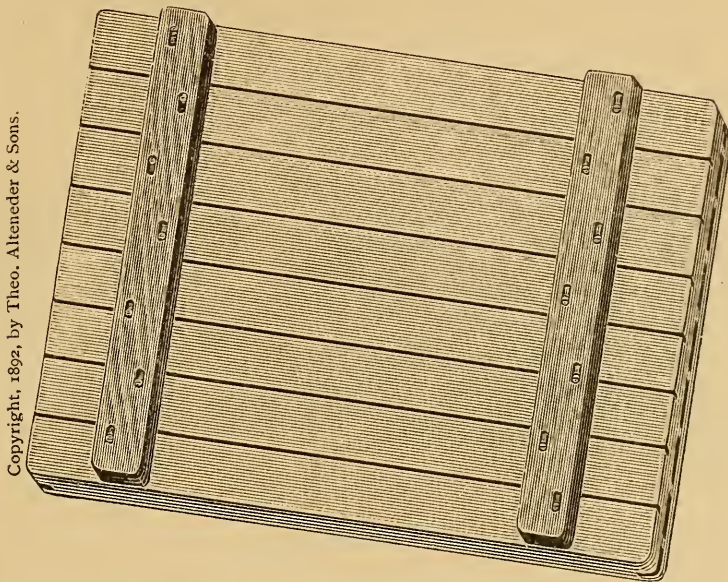
Mahogany Ebony-Lined Triangles.

		6	7	8	9	10	11	12	14 inch
664	30° x 60°	\$0 50	0 60	0 65	0 70	0 75	0 80	0 90	1 00
666	45°	0 60	0 65	0 70	0 80	0 85	0 90	1 00	1 25

Ash-Wood Maple-Lined Triangles.

		6	7	8	9	10	11	12	14 inch
668	30° x 60°	\$0 25	0 35	0 45	0 50	0 60	0 70	0 80	1 00
670	45°	0 30	0 35	0 40	0 50	0 60	0 75	0 85	1 10

# Drawing Boards.



Copyright, 1892, by Theo. Alteneder & Sons.

700

700 Drawing Board, made of narrow strips of well-seasoned pine wood,  $1\frac{1}{8}$  inches thick, with hard-wood ledges, secured by screws running in brass oval slot bushings sunk in the ledges. The back of the board is cut half through at every few inches, to prevent warping. A strip of hard wood is let into each end, to make a good working edge for T Square.

16 x 21 . . . . .	\$3 00	27 x 34 . . . . .	\$7 25
20 x 26 . . . . .	4 50	31 x 42 . . . . .	8 50
23 x 31 . . . . .	6 00	36 x 54 . . . . .	12 00

702 Drawing Board, made of narrow strips of well-seasoned pine wood, 1 inch thick, with hard-wood ledges, secured by screws running in brass oval slot bushings sunk in ledges.

16 x 21 . . . . .	\$1 50	27 x 34 . . . . .	\$4 50
20 x 26 . . . . .	2 25	31 x 42 . . . . .	5 75
23 x 31 . . . . .	3 50	36 x 54 . . . . .	9 00

704 Drawing Board, made of well-seasoned pine wood,  $\frac{7}{8}$  inch thick, with hard-wood ledges.

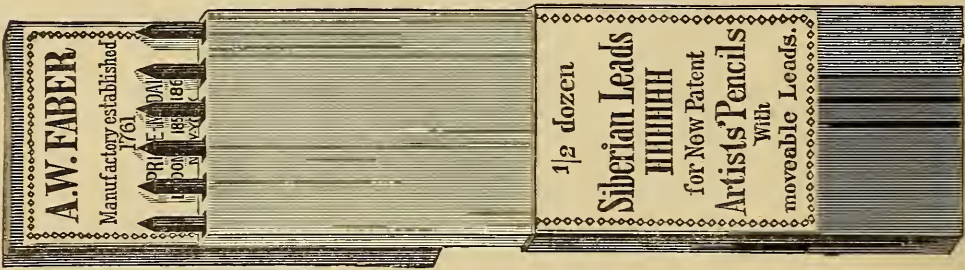
16 x 21 . . . . .	\$1 25	23 x 31 . . . . .	\$3 00
20 x 26 . . . . .	1 75	27 x 34 . . . . .	3 50



A. W. Faber's Siberian Leads.

For Pencil Points of Alteneder Drawing Instruments and for Faber's Artist's Pencil.

6H, 4H, 3H, 2H, H, F, HB, B, BB, 3B, 4B, 6B.



750

- 750 A. W. Faber's Siberian Leads, 6H to BB, per box of six . . . \$0 65  
751 A. W. Faber's Siberian Leads, 3B, 4B and 6B, per box of six . . . 75



753

- 752 A. W. Faber's Artist's Pencil, movable leads, single pointed . . . \$0 25  
753 A. W. Faber's Artist's Pencil, movable leads, double pointed . . . 35

A. W. Faber's Lead Pencils.

- 756 A. W. Faber's Hexagon Siberian, 2B to 6H . . doz., \$1 10 each, \$0 10  
757 A. W. Faber's Hexagon Siberian, 3B and 4B . . " 1 25 " 12  
758 A. W. Faber's 6B . . . . . " 1 50 " 15  
759 A. W. Faber's Black Round, 1 to 4 . . . . . " 60 " 5  
760 A. W. Faber's Red Hexagon, 1 to 5 . . . . . " 75 " 7  
761 A. W. Faber's Yellow Round, 4H to 4B . . . " 60 " 6
- 770 Dixon's Hexagon Artist's Pencils, Best.  
VVH, VH, H, MH, M, MB, SM, S, VS, VVS, doz., \$1 00 each, \$0 10
- 772 Dixon's Hexagon, American Graphite.  
VH, H, MH, M, MB, SM, S . . . . . " 70 " 7
- 774 Dixon's Round, American Graphite.  
VH, H, MH, M, MB, SM, S . . . . . " 55 " 6
- 780 Hardmuth's " Koh-i-noor " Pencil, 6H to 3B . . " 1 20 " 12  
782 Hardmuth's " Koh-i-noor " Pencil, 4B . . . . . " 1 40 " 14  
784 Hardmuth's " Koh-i-noor " Pencil, 6B . . . . . " 1 60 " 16

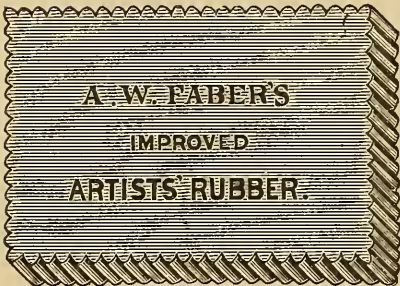
## Lead Pencils.

786	Hardmuth's "Graphite Comprime" Pencil, 6 H to 3 B; Dozen, \$1 00; each, \$0 10	
788	Hardmuth's "Graphite Comprime" Pencil, 4 B; Dozen, \$1 25; each,	12
790	Hardmuth's "Graphite Comprime" Pencil, 6 B; Dozen, \$1 50; each,	15
792	Hardmuth's Artist's Pencil, Movable Leads, 6 H to 3 B . . . . .	25
794	Hardmuth's Artist's Pencil, Movable Leads, 4 B . . . . .	30
796	Hardmuth's Artist's Pencil, Movable Leads, 6 B . . . . .	35
800	Hardmuth's "Graphite Comprime" Leads for Artist's Pencils.	
802	Per box of 6, 6 H to 3 B . . . . .	60
804	Per box of 6, 4 B . . . . .	75
	Per box of 6, 6 B . . . . .	90

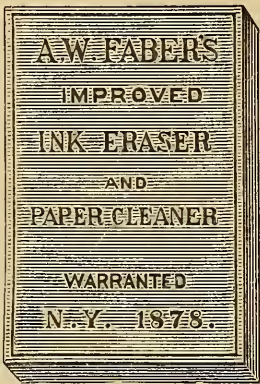
## Lead Pencils in Boxes.

806	A. W. Faber's Siberian Lead Pencils, per box of 5 . . . . .	\$1 00
807	A. W. Faber's Siberian Lead Pencils, per box of 7 . . . . .	1 25
808	A. W. Faber's Siberian Lead Pencils, per box of 10 . . . . .	1 75
809	A. W. Faber's Siberian Lead Pencils, per box of 5, Knife and Rubber . . . . .	1 25
810	A. W. Faber's Yellow Round Pencils, per box of 5 . . . . .	60
811	A. W. Faber's Yellow Round Pencils, per box of 7 . . . . .	75
812	A. W. Faber's Yellow Round Pencils, per box of 10 . . . . .	85
814	A. W. Faber's Yellow Round Pencils, per box of 5, Knife and Rubber . . . . .	1 00
820	Dixon's Artist's Hexagon, 4 in Polished Cedar Box . . . . .	75
821	Dixon's Artist's Hexagon, 6 in Polished Cedar Box . . . . .	1 00
822	Dixon's Artist's Hexagon, 8 in Polished Cedar Box . . . . .	1 50
823	Dixon's Artist's Hexagon, 4 in Paper Box . . . . .	50
824	Dixon's Artist's Hexagon, 6 in Paper Box . . . . .	65
825	Dixon's Artist's Hexagon, 8 in Paper Box . . . . .	80
830	Hardmuth's "Graphite Comprime" Pencils, 12 Grades, 6 H to 6 B, in Cedar Case . . . . .	1 75
832	Hardmuth's "Koh-i-Noor" Pencils, 12 Grades, 6 H to 6 B, in Cedar Case . . . . .	2 00

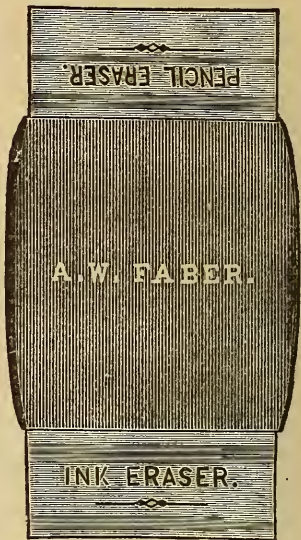
Ink and Pencil Erasers.



840



841



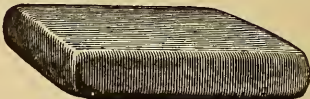
842

840	A. W. Faber's Artist's Rubber . . . . .	per cake, 10, 15, 25, 50 cents
841	A. W. Faber's Ink Eraser . . . . .	" 5, 10, 20 "
842	A. W. Faber's Ink and Pencil Eraser, wood center . .	15, 25 "

Davidson's Velvet Rubber.



850



851

850	Davidson's Velvet Rubber, oblong . . . . .	10, 20, 50 cents
851	Davidson's Velvet Rubber, flat . . . . .	15, 20 "

Sponge Rubber.

EXTRA GOOD QUALITY.

862	Size, 2 x 3 x 1 inches . . . . .	each, \$0 60
863	Size, 3 x 4 x 1 inches . . . . .	" 1 25
864	Size, 3 x 6 x 1 inches . . . . .	" 1 75

Steel Erasers.

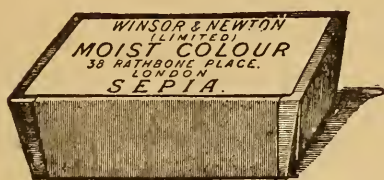


871

870	Steel Erasers, coco handle, short blade . . . . .	\$0 35
871	Steel Erasers, coco handle, long blade . . . . .	50
872	Steel Erasers, white handle, short blade . . . . .	65
873	Steel Erasers, white handle, long blade . . . . .	1 00



## Winsor &amp; Newton's Water Colors.



	Whole Cake or Pan.	Half Cake or Pan.		Whole Cake or Pan.	Half Cake or Pan.
Antwerp Blue . . . . .	\$0 25	\$0 15	†Leitch's Blue . . . . .	\$0 45	\$0 25
Aureolin . . . . .	90	45	Lemon Yellow . . . . .	65	35
Bistre . . . . .	25	15	Light Red . . . . .	25	15
*Black Lead . . . . .	45	25	Madder Carmine . . . . .	90	45
Blue Black . . . . .	25	15	Mars Orange . . . . .	65	35
*British Ink . . . . .	25	15	Mars Yellow . . . . .	45	25
*Bronze . . . . .	25	15	†Mauve . . . . .	25	15
Brown Madder . . . . .	45	25	Naples Yellow . . . . .	25	15
Brown Ochre . . . . .	25	15	Neutral Orange . . . . .	45	25
Brown Pink . . . . .	25	15	Neutral Tint . . . . .	25	15
Burnt Carmine . . . . .	90	45	New Blue . . . . .	25	15
Burnt Sienna . . . . .	25	15	Olive Green . . . . .	25	15
Burnt Umber . . . . .	25	15	Orange Chrome . . . . .	25	15
Cadmium Orange . . . . .	65	35	Orange Vermilion . . . . .	45	25
Cadmium Yellow . . . . .	65	35	Pale Cadmium Yellow . . . . .	65	35
Carmine . . . . .	90	45	Payne's Grey . . . . .	25	15
Carmine Lake . . . . .	45	25	Pink Madder . . . . .	90	45
Cerulean Blue . . . . .	45	25	Prussian Blue . . . . .	25	15
†Charcoal Grey . . . . .	25	15	Prussian Green . . . . .	25	15
Chinese White . . . . .	25	15	Pure Scarlet . . . . .	65	35
Chrome Yellow . . . . .	25	15	Purple Lake . . . . .	45	25
Cobalt Blue . . . . .	65	35	Purple Madder . . . . .	90	45
Cologne Earth . . . . .	25	15	Raw Sienna . . . . .	25	15
Constant White . . . . .	25	15	Raw Umber . . . . .	20	10
Crimson Lake . . . . .	45	25	Roman Ochre . . . . .	25	15
Deep Chrome . . . . .	25	15	Roman Sepia . . . . .	45	25
*Dragon's Blood . . . . .	25	15	Rose Madder . . . . .	90	45
Emerald Green . . . . .	25	15	Rubens' Madder . . . . .	45	25
Field's Orange Vermil-			Sap Green . . . . .	25	15
ion . . . . .	90	45	Scarlet Lake . . . . .	45	25
*Flake White . . . . .	25	15	Scarlet Madder . . . . .	45	25
French Blue . . . . .	65	35	Scarlet Vermilion . . . . .	45	25
Gamboge . . . . .	25	15	Sepia . . . . .	45	25
Green Oxide of Chro-			Smalt . . . . .	I 40	70
mium . . . . .	65	35	Terre Verte . . . . .	25	15
Hooker's Green, No. 1	25	15	Ultramarine Ash . . . . .	I 40	70
Hooker's Green, No. 2	25	15	Vandyke Brown . . . . .	25	15
Indian Purple . . . . .	65	35	Venetian Red . . . . .	25	15
Indian Red . . . . .	25	15	Vermilion . . . . .	25	15
Indian Yellow . . . . .	65	35	Violet Carmine . . . . .	65	35
Indigo . . . . .	25	15	Viridian (Veronese		
Intense Blue . . . . .	65	35	Green) . . . . .	65	35
Italian Pink . . . . .	25	15	Warm Sepia . . . . .	45	25
Ivory Black . . . . .	25	15	Yellow Carmine . . . . .	90	45
*King's Yellow . . . . .	25	15	Yellow Lake . . . . .	25	15
Lamp Black . . . . .	25	15	Yellow Ochre . . . . .	25	15

\* Not made moist.

† Not made in cakes.

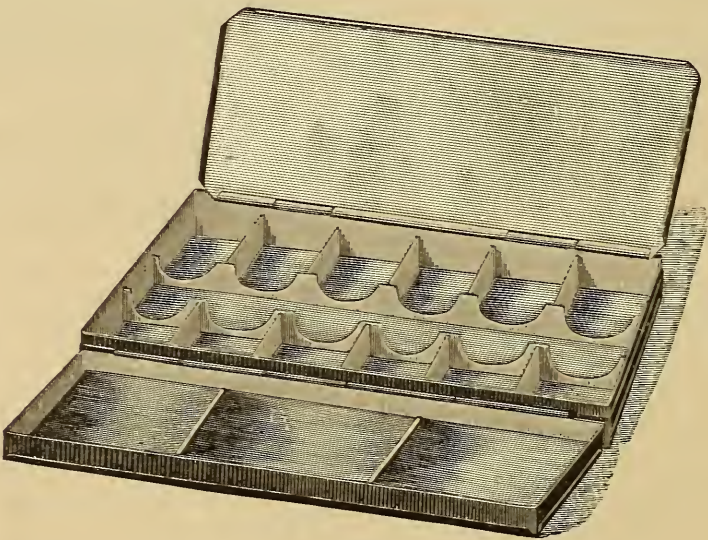


880

Winsor & Newton's  
Liquid Colors.

880	Winsor & Newton's Liquid Indian Ink . . .	\$o 3o
881	Winsor & Newton's Liquid Indelible Brown Ink . . . . .	3o
882	Winsor & Newton's Liquid Prouts Brown . .	3o
883	Winsor & Newton's Liquid Sepia . . . . .	3o
884	Winsor & Newton's Liquid Carmine . . . .	3o
885	Winsor & Newton's Liquid Chinese White .	3o
886	Winsor & Newton's Liquid Prussian Blue . .	3o
887	Winsor & Newton's Liquid Ox Gall in Pots .	3o

Empty Japanned Tin Boxes for Moist Colors



890

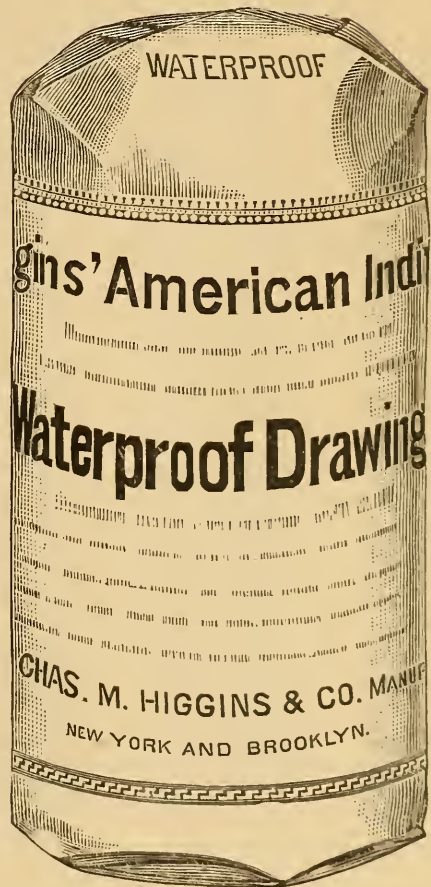
890	For 12 Half Pans . . . . .	\$o 75
891	For 18 Half Pans . . . . .	1 0o
892	For 24 Half Pans . . . . .	1 2o
893	For 6 Whole Pans or 12 Half Pans . . . . .	75
894	For 8 Whole Pans or 16 Half Pans . . . . .	9o
895	For 10 Whole Pans or 20 Half Pans . . . . .	1 0o
896	For 12 Whole Pans or 24 Half Pans . . . . .	1 1o
897	For 18 Whole Pans or 36 Half Pans . . . . .	1 35
898	For 24 Whole Pans or 48 Half Pans . . . . .	1 5o



Liquid Drawing Inks.



900

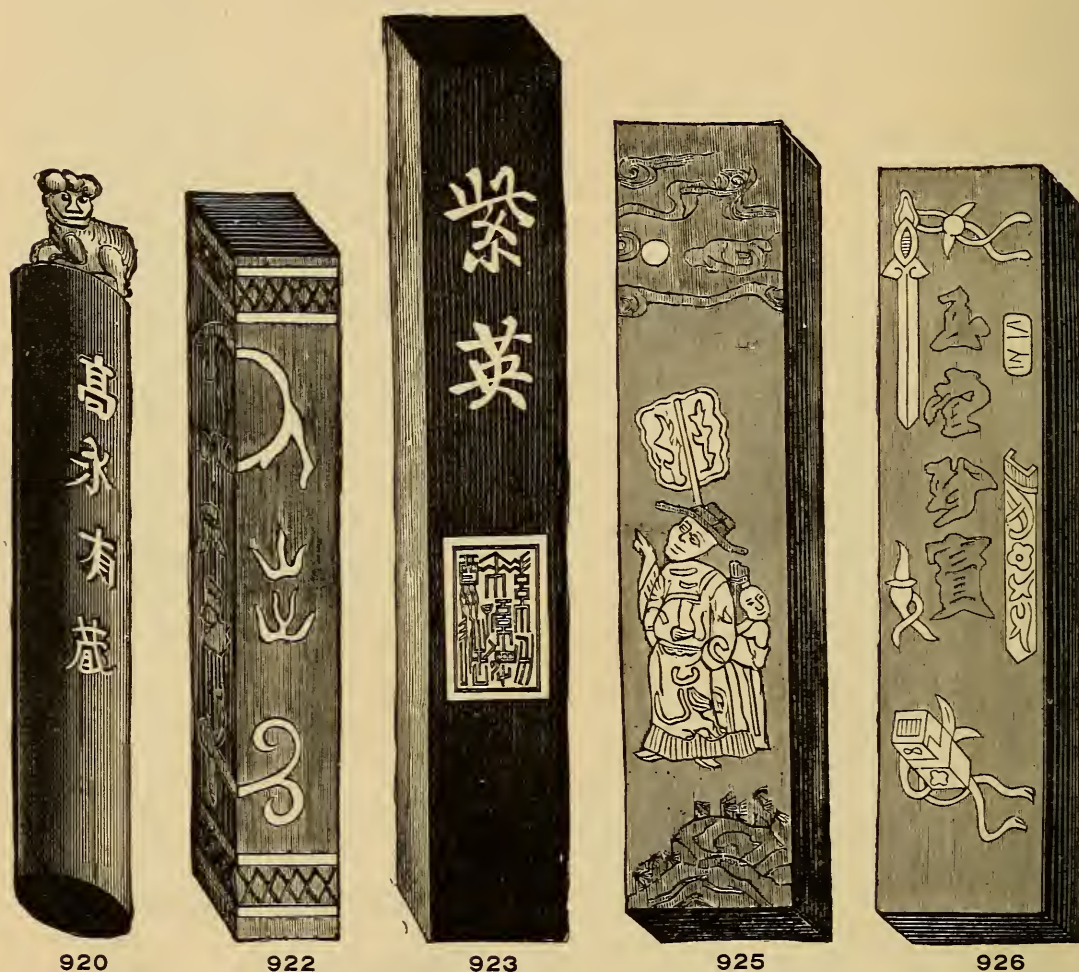


901

900	Higgins' Black General Drawing Ink . . . . .	\$o 25
901	Higgins' Black Waterproof Drawing Ink . . . . .	25
902	Higgins' Blue Waterproof Drawing Ink . . . . .	25
903	Higgins' Green Waterproof Drawing Ink . . . . .	25
904	Higgins' Scarlet Waterproof Drawing Ink . . . . .	25
905	Higgins' Red Waterproof Drawing Ink . . . . .	25
906	Higgins' Vermillion Waterproof Drawing Ink . . . . .	25
907	Higgins' Carmine Waterproof Drawing Ink . . . . .	35
910	French Indelible Drawing Ink, small size . . . . .	25
911	French Indelible Drawing Ink, large size . . . . .	50
914	Crown Drawing Inks, General Black, Indelible Black, Blue, Green, Scarlet and Red, per bottle . . . . .	25



## Chinese Inks.

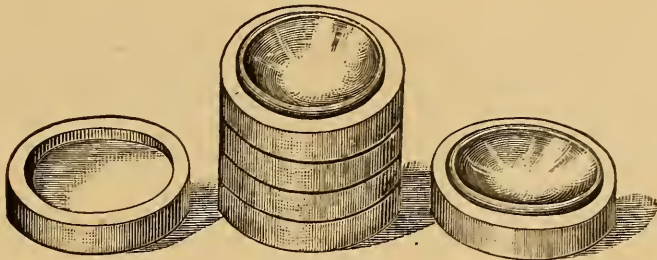


920	Lion Head . . . . .	per stick, \$o	50
921	Square, black, gilt figures . . . . . small,	"	75
922	Square, black, gilt figures . . . . . large,	"	1 25
923	Super super black, gilt figures . . . . . large,	"	1 00
924	Super super black, gilt figures . . . . . small,	"	50
925	Oblong, black, gilt figures . . . . .	"	1 25
926	Oblong, black, gilt figures . . . . .	"	1 50
927	Oblong, black, double dragon . . . . .	"	2 00

## Japanese Inks.

935	Japan Ink . . . . .	per stick, \$o	75
936	Japan Ink, fine quality . . . . .	"	2 00
937	Japan Ink, extra fine quality . . . . .	"	4 00

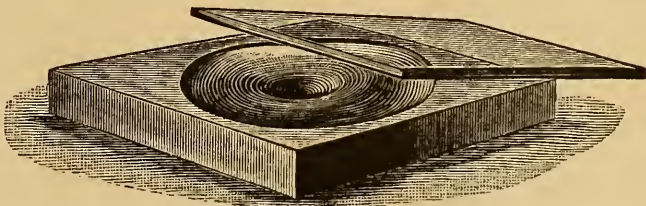
China Ware.



1000

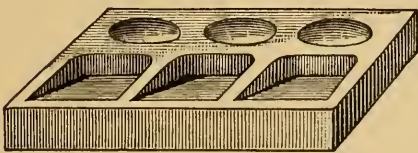
Five Cups and Cover comprise a Set.

1000	Cabinet Nests, 6 in a set, $2\frac{3}{8}$ inches, per set . . . . .	\$0 50
1001	Cabinet Nests, 6 in a set, $2\frac{3}{4}$ inches, per set . . . . .	65
1002	Cabinet Nests, 6 in a set, $3\frac{1}{4}$ inches, per set . . . . .	75
1003	Cabinet Nests, 6 in a set, $3\frac{3}{4}$ inches, per set . . . . .	85

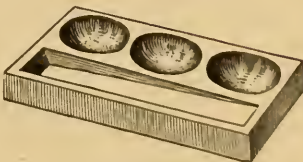


1005

1005	Slate Ink Saucer, with Glass Cover . . . . .	\$0 35
1006	White Glass Saucer, with Cover . . . . .	50

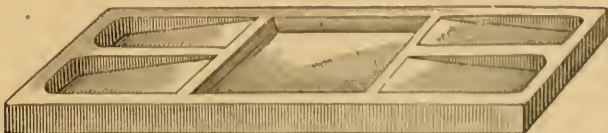


1008



1012

1008	Ink and Color Slab, 3 Wells and 3 Slants, $2\frac{1}{2} \times 4$ . . . . .	\$0 20
1010	Ink and Color Slab, 5 Wells and 5 Slants, $4 \times 7\frac{5}{8}$ . . . . .	50
1012	Ink and Color Slab, 3 Wells and 1 Slant, $1\frac{1}{2} \times 2\frac{3}{4}$ . . . . .	15
1014	Ink and Color Slab, 3 Wells and 1 Slant, $2\frac{1}{2} \times 4$ . . . . .	25
1016	Ink and Color Slab, 3 Wells and 1 Slant, $2\frac{3}{4} \times 4\frac{3}{8}$ . . . . .	30
1018	Ink and Color Slab, 3 Wells and 1 Slant, $3\frac{1}{4} \times 5$ . . . . .	40



1020

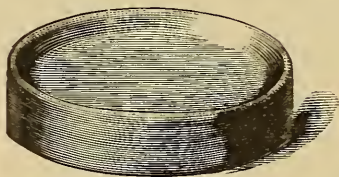
1020	Box Center, 4 Slants, $2\frac{3}{8} \times 6$ . . . . .	\$0 35
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## China Ware.



1027

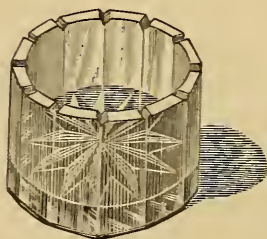
1025	Slanting Tile, 3 Divisions, $2\frac{1}{2} \times 4$ . . . . .	\$0 15
1026	Slanting Tile, 4 Divisions, $3 \times 7\frac{3}{4}$ . . . . .	25
1027	Slanting Tile, 5 Divisions, $3 \times 7\frac{3}{4}$ . . . . .	35
1028	Slanting Tile, 6 Divisions, $3 \times 7\frac{3}{4}$ . . . . .	40
1029	Slanting Tile, 8 Divisions, $6 \times 7\frac{5}{8}$ . . . . .	50
1030	Slanting Tile, 10 Divisions, $6 \times 7\frac{5}{8}$ . . . . .	60
1031	Slanting Tile, 12 Divisions, $6 \times 7\frac{5}{8}$ . . . . .	70



1035

1035 Single China Cups.

1	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 inches
\$0 04	0 08	0 10	0 15	0 20	0 25



1038

1038	Water Glass, Cut Glass, $2\frac{1}{2}$ inches diameter . . . . .	\$0 15
1039	Water Glass, with Two Lips, 3 inches diameter . . . . .	25
1040	Water Glass, with Two Lips, $3\frac{1}{2}$ inches diameter . . . . .	35
1042	China Brush Rest, $5\frac{1}{2}$ inches long . . . . .	15



# Brushes.



1050

1050 Camel Hair in Quills.

Nos.	1	2	3	4	5	6	7	8
\$o	10	o 08	o 07	o 07	o 06	o 06	o 04	o 04

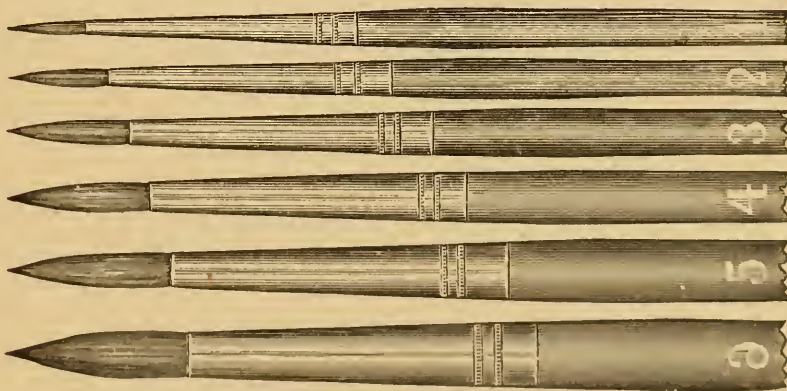
1051 Red Sable in Quills.

Nos.	1	2	3	4	5	6	7	8
\$o	50	o 40	o 35	o 28	o 22	o 18	o 13	o 10

1052 Black Sable in Quills.

Nos.	1	2	3	4	5	6	7	8
\$o	50	o 40	o 35	o 28	o 22	o 18	o 13	o 10

...



1058

1058 Camel Hair in Tin.

Nos.	1	2	3	4	5	6
\$o	07	o 08	o 09	o 10	o 11	o 12

1059 Red Sable in Tin.

Nos.	1	2	3	4	5	6	7	8	9	10	11	12
\$o	15	20	28	35	45	55	75	1 00	1 35	1 70	2 00	2 35

1060 Black Sable in Tin.

Nos.	1	2	3	4	5	6	7	8	9	10	11	12
\$o	12	15	20	30	40	50	75	1 00	1 25	1 50	2 00	2 50

## Soennecken's Pens.



1070 Soennecken's Pens, Single Pointed.

Nos. 1, 2, 2½, 3, 3½, 4, 5, 6, Assorted or Single Numbers,  
¼ gross . . . . . \$0 35



1071 Soennecken's Pens, Double Pointed.

Nos. 10, 20, 30, Assorted or Single Numbers, ¼ gross . . . . 1 00

1072 Sample Assortment of 25 Single and Double Pointed Pens . . . . 35



1073 Ink Holders for Single and Double Pointed Pens, box of 6 . . . . 35



1074 Round Writing Instrument, with 9 Pens . . . . . 1 00

1075 Pens only, per dozen . . . . . 75



### Fluent Writing Pens.

1076 Nos. 206, 207, 208, Square Pointed, } per ¼ gross . . . . . 35

1077 Nos. 106, 107, 108, Oblique Pointed, } 25 Asst. Sample Pens . . . . 35

### Pen Holders.

1078 Single Pen Holder for Round and Fluent Writing Pens . . . . . 10

1079 Double Pen Holder for Round and Fluent Writing Pens . . . . . 10

### Text Books.

1080 Methodical Text Book on Round Writing, by F. Soennecken,  
including an Assortment of 25 Single and Double Pointed Pens, 1 00

1081 Methodical Text Book, without Pens . . . . . 65

1082 Copy Book, without Instructions, including an Assortment of  
25 Pens . . . . . 70

1083 Copy Book, without Pens . . . . . 35

# Gillott's Pens.



1090	Gillott's Mapping, on Card, with Holder, per dozen . . . . .	\$0 60
1091	Gillott's Crow Quills, on Card, with Holder, per dozen . . . . .	60
1092	Gillott's Extra Fine Long Nib Crow Quills, on Card, with Holder, per dozen . . . . .	75
1093	Gillott's Lithographic Pens, on Card, with Holder, per dozen . . .	60
1094	Gillott's Lettering Pens, No. 303, per dozen . . . . .	15
1095	Gillott's Lettering Pens, No. 170, per dozen . . . . .	10
1096	Gillott's Lettering Pens, No. 404, per dozen . . . . .	10
1097	French Crow Quill Pens, 1 dozen, with Holder . . . . .	40
1098	Improved Holder for Crow Quill Pens, Extra Thick . . . . .	10
1099	Improved Holder for Lettering Pens, Extra Thick . . . . .	10

# Steel Tapes.

Chesterman's Steel Tapes, Leather Case, Flush Handle.

	25	33	50	66	75	100 feet
1100	Divided in tenths of a foot, \$4 50	5 25	7 25	9 00	10 25	12 75
1102	Divided in twelfths of a foot, 4 50	5 25	7 25	9 00	10 25	12 75

Chesterman's Metallic Tapes, Leather Case, Folding Handle.

	25	33	50	66	75	100 feet
1104	Divided in tenths of a foot, \$2 00	2 25	2 75	3 25	3 75	4 50
1106	Divided in twelfths of a foot, 2 00	2 25	2 75	3 25	3 75	4 50

Paine's Patent Steel Tapes, Leather Case, Flush Handle.

	33	50	66	75	100 feet
1108	Divided in tenths of a foot . . \$5 50	8 00	10 00	12 00	15 00
1110	Divided in twelfths of a foot . . 5 50	8 00	10 00	12 00	15 00

Paine's Patent Steel Tapes, Japanned Metal Case, Folding Handle.

	25	33	50	66	75	100 feet
1112	Divided in tenths of a foot, \$3 50	4 50	6 00	8 00	10 00	12 00
1114	Divided in twelfths of a foot, 3 50	4 50	6 00	8 00	10 00	12 00
1116	Compensating Handles for Paine's Tapes . . . . .					\$3 00

# Pocket Tapes.

Chesterman's Steel Pocket Tapes, German Silver Case, with Spring and Stop.

1118	{ Divided to $\frac{1}{16}$ inch one side,	3	4	5	6	10
	{ millimeters on the other . . . . .	\$1 50	2 00	2 25	2 50	3 25



Drawing Papers.

Whatman's Papers.

“H. P.” Hot Pressed or Smooth Surface; “N.” Not Hot Pressed or Slightly Grained Surface;  
“R.” Rough.

Selected Best Only.

			Per Sheet.	Per Quire.
1150	Cap,	13 x 17, H. P. or N. . . . .	\$0 04	\$0 75
1151	Demy,	15 x 20, “ . . . . .	05	1 00
1152	Medium,	17 x 22, “ . . . . .	07	1 40
1153	Royal,	19 x 24, “ . . . . .	10	1 75
1154	Super Royal,	19 x 27, “ . . . . .	12	2 20
1155	Imperial,	22 x 30, “ . . . . .	15	3 00
1156	Double Elephant,	27 x 40, “ . . . . .	25	5 50
1157	Antiquarian,	31 x 52, “ . . . . .	1 50	30 00
1160	Royal,	19 x 24, R. . . . .	10	2 00
1161	Imperial,	22 x 30, R. . . . .	18	3 50
1162	Double Elephant,	27 x 40, R. . . . .	30	6 00

German Drawing Papers.

Smooth Surface.

			Per Sheet.	Per Quire.
1170	Cap,	14 x 17 . . . . .	\$0 02	35
1171	Demy,	15½ x 19½ . . . . .	03	45
1172	Medium,	17 x 22 . . . . .	04	65
1173	Royal,	19 x 24 . . . . .	06	90
1174	Super Royal,	19 x 27 . . . . .	08	1 00
1175	Imperial,	22 x 30 . . . . .	09	1 25
1176	Double Elephant,	26 x 40 . . . . .	18	2 50

Reynold's Bristol Boards.

			2 Sheet.	3 Sheet.	4 Sheet.
1180	Cap,	12 x 15, per dozen . . . . .	\$0 60	\$0 90	\$1 20
1181	Demy,	14 x 18, “ . . . . .	90	1 35	1 80
1182	Medium,	16½ x 21, “ . . . . .	1 35	2 00	2 50
1183	Royal,	18 x 22, “ . . . . .	1 50	2 50	3 00
1184	Super Royal,	20½ x 28, “ . . . . .	—	5 00	7 00

Patent Office Bristol Boards.

			Per Dozen.
1186	10 x 15, Plain . . . . .		\$0 60
1187	15 x 20, “ . . . . .		1 20
1188	10 x 15, Printed . . . . .		85

# Drawing Papers.

## White Roll Drawing Paper.

Slightly Grained Surface.

		Per Yard.	Roll of 10 Yds.	Per Lb., in Rolls of 30 to 40 Lbs.
1190	36 inches wide, Medium . . . . .	\$0 20	\$1 60	\$0 35
1191	42 " " " Heavy . . . . .	25	1 85	35
1192	60 " " Heavy . . . . .	40	3 50	35

## White Roll Drawing Paper.

Surface like Whatman's H. P.

		Per Yard.	Roll of 10 Yds.	Per Lb., in Rolls of 30 to 40 Lbs.
1195	36 inches wide . . . . .	\$0 20	\$1 80	\$0 40
1196	48 " " . . . . .	30	2 80	40
1197	54 " " . . . . .	40	3 75	40
1198	62 " " Thin . . . . .	40	3 75	40
1199	62 " " Heavy . . . . .	50	4 50	40

## White Roll Drawing Paper, Extra Quality.

Nos. 1200 to 1204 Have Light Eggshell Surface.

		Per Yard.	Roll of 10 Yds.	Per Lb., in Rolls of 30 to 40 Lbs.
1200	36 inches wide, Medium . . . . .	\$0 30	\$2 50	\$0 45
1201	42 " " " . . . . .	35	3 00	45
1202	58 " " " . . . . .	45	4 00	45
1203	58 " " Thin . . . . .	42	3 75	45
1204	58 " " Heavy . . . . .	60	5 40	45
1205	58 " " Medium, Smooth . . . . .	45	4 00	45

## Light Buff Detail Drawing Paper.

		Per Yard.	Roll of 10 Yds.	Per Lb., in Rolls of 25 to 30 Lbs.
1210	36 inches wide . . . . .	\$0 12	\$1 00	\$0 25
1211	42 " " . . . . .	15	1 35	25
1212	54 " " . . . . .	20	1 80	25
1214	In Sheets, Extra Heavy, 28 x 40 . . . . .		Per Sheet. \$0 15	Per Quire. \$2 50

## Dark Buff Detail Drawing Paper.

		Per Yard.	Roll of 10 Yds.	Per Lb., in Rolls of 25 to 30 Lbs.
1216	36 inches wide, Heavy . . . . .	\$0 18	\$1 60	\$0 25
1217	42 " " " . . . . .	20	1 80	25
1218	54 " " " . . . . .	25	2 25	25

# Drawing and Tracing Papers.

## Mounted Drawing Paper in Rolls.

Nos. 1230 to 1234 Have Light Eggshell Surface.

			Per Yard.	Roll of 10 Yds.
1230	36 inches wide, Medium . . . . .		\$0 90	\$7 85
1231	42 " " " . . . . .		1 00	8 85
1232	58 " " " . . . . .		1 35	11 75
1233	58 " " Thin . . . . .		1 25	11 00
1234	58 " " Heavy . . . . .		1 60	13 00
1235	58 " " Medium, Smooth . . . . .		1 35	11 75

## Whatman's Mounted Papers in Sheets.

			Per Sheet.
1240	Royal, 18 x 24 . . . . .		\$0 40
1241	Imperial, 22 x 30 . . . . .		45
1242	Double Elephant, 27 x 40 . . . . .		70
1243	Antiquarian, 31 x 53 . . . . .		1 80

## Imperial Tracing Cloth, Dull Back.

1250	30 inches wide, in Rolls of 24 yards . . . . .	\$6 90
1251	36 " " " " " . . . . .	7 60
1252	42 " " " " " . . . . .	10 50

## French Vegetable Tracing Paper in Sheets.

		Per Sheet.	Per Quire.
1260	13 x 17 . . . . .	\$0 05	\$0 75
1261	15 x 20 . . . . .	06	1 25
1262	19 x 24 . . . . .	10	2 00
1263	28 x 42 . . . . .	50	9 00

## Tracing Papers in Rolls.

		Per Yard.	Roll of 20 Yds.
1270	Light Vegetable, 28½ inches wide . . . . .	\$0 10	\$1 20
1271	" " 43 " " . . . . .	15	1 50
1272	Heavy " 57 " " . . . . .	20	2 50
1273	Parchment, Light, 39 inches wide . . . . .	18	2 50
1274	" Medium, 39 " " . . . . .	25	3 75
1275	" Thick, 39 " " . . . . .	30	4 25

## Transfer Papers.

		Per Sheet.	Per Dozen.
1280	Blue, Red, Black, White, Yellow . . . . .	\$0 12	\$1 20



# Profile and Cross Section Papers.

## Profile Papers.

Red or Green.

Plate A. 4 and 20 to the inch.

		Per Sheet.	Per Quire.
1281	In Sheets, 42 x 15 . . . . .	\$0 40	\$8 50
1282	" 42 x 6½ . . . . .	30	6 50
1283	" 42 x 15, Printed on Tracing Cloth . . . . .	1 00	—
Per Yard.			
1284	Continuous, 20 inches wide . . . . .	\$0 30	
1285	" 20 " " in Rolls of 20 yards, Mounted . . . . .		75

Plate B. 4 and 30 to the inch.

		Per Sheet.	Per Quire.
1290	In Sheets, 15 x 42 . . . . .	\$0 40	\$8 50
1291	" 6½ x 42 . . . . .	30	6 50
1292	" 15 x 42, Printed on Tracing Cloth . . . . .	1 00	—
Per Yard.			
1293	Continuous, 20 inches wide . . . . .	\$0 30	
1294	" 20 " " in Rolls of 20 yards, Mounted . . . . .		75

Plate C. 5 and 25 to the inch.

		Per Sheet.	Per Quire.
1296	In Sheets, 15 x 42 . . . . .	\$0 40	\$8 50

## Cross Section Paper.

Red or Blue.

		Per Sheet.	Per Quire.
1302	In Sheets, 16 x 20, 8 x 8 to 1 inch . . . . .	\$0 25	\$5 00
1303	" 16 x 20, 10 x 10 " 1 " . . . . .	25	5 00
1304	" 20 x 24, 10 x 10 " 1 " . . . . .	30	6 50
1305	" 16 x 20, 5 x 5 " ½ " . . . . .	25	5 00
1306	" 16 x 21, 16 x 16 " 1 " . . . . .	25	5 00
Per Roll.			
1308	Continuous, 24 inches wide, 10 x 10 to 1 inch, 11 yards in Roll . . . . .	\$4 00	
1310	" 24 " " 16 x 16 " 1 " 11 " " . . . . .	4 00	
1312	" 24 " " 8 x 8 " 1 " 11 " " . . . . .	4 00	
Per Quire.			
1320	Ruled, Blue, 16 x 21, 5 x 5 to 1 inch . . . . .	\$1 50	
1321	" " 16 x 21, 8 x 8 " 1 " . . . . .	1 50	
1322	" " 18 x 23, 10 x 10 " 1 " . . . . .	1 50	

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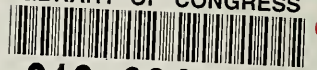








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